VEOLIA
ENVIRONMENTAL SERVICES

TECHNICAL SOLUTIONS
NORTH AMERICA

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OCT 14 2008
AIR ENFORCEMENT BRANCH
U.S. EPA, REGION 5

October 10, 2008
Via FedEx

Attn: Compliance Tracker, AE-17J
Air Enforcement and Compliance Assurance Branch
United States Environmental Protection Agency
Region 5
77 W. Jackson Blvd., AE-17J
Chicago, IL 60604

RE: Veolia ES Technical Solutions, L.L.C.
163121AAP
40 CFR Part 63 – Subpart EEE
National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors
Notification of Compliance (NOC)

Compliance Tracker,

Pursuant to Appendix B, Items 9, 11 and 12 of the Request to Provide Information Pursuant to the Clean Air Act from USEPA, Region 5, dated February 22, 2008, revised June 5, 2008 and revised on September 16, 2008, Veolia ES Technical Solutions, L.L.C., hereby submits the Notification of Compliance (NOC), the Performance Test Reports for Incinerators 2, 3 and 4 and the Significant Modification to the Part 71 Permit. The NOC documents compliance with the emission standards and continuous monitoring system requirements, and identifying operating parameter limits for mercury, SVM and LVM defined in 40 CFR 63.1209 and 63.1219. Veolia is now complying with all operating requirements specified in this NOC. The Performance Test Reports detail compliance with these standards and the Significant Modification request that the revised OPL's be incorporated into Veolia's Part 71 permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the

Veolia ES Technical Solutions, L.L.C.
#7 Mobile Ave, Sauget, IL 62201
tel: 618 271 2804 - fax: 618 271 2128

information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Upon review of this submittal, should the Agency have a need for additional information or questions, please contact Dennis Warchol at (618) 271-2804 or via e-mail at dwarchol@onyxes.com or myself at (618) 271-2804 or via e-mail at dharris@onyxes.com..

Sincerely,
Veolia ES Technical Solutions, L.L.C.

Doug Harris

Doug Harris
General Manager

Att.

cc: Genevieve Damico, USEPA (Significant Modification Only)
USEPA File

Veolia ES Technical Solutions, L.L.C.
Significant Modification to Part 71 Permit
Title V Permit #: V-IL-1716300103-08-01

Pursuant to 40 CFR 71.7(e)(3), Veolia ES Technical Solutions, L.L.C. is submitting a significant modification to our Part 71 Permit number V-IL-1716300103-08-01. The following pages detail the requested modifications, supporting information and justification for the modification. The requested modifications are as followed:

- Section 1 (B) Dates of Construction for Incinerators 2, 3 and 4
- Section 2.1 (C)(2) Operating Parameter Limits for Units 2, 3 and 4
- Section 2.2 Material Processing, Handling of Level 2 Containers
- Section 2.4 Storage Tanks, Monitoring and Testing for Tanks Maintained at Atmospheric
- 550 Gasoline Storage, Insignificant Activity
- Drum Sampling, Insignificant Activity

Section 1 (B) Source Emission Points

Veolia request that the dates of construction for Incinerators 2, 3 and 4 be modified as followed:

Incinerator	Date of Construction
#2	9/1986 (correct in permit)
#3	8/1988 (permit states 9/1986)
#4	8/1988 (permit states 6/1988)

These revised dates are taken directly from the construction permits issued by IEPA (construction permits attached).

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

DATE? ?

Trade Waste Incineration
Attention: James L. Gary
7 Mobile Avenue
Sauget, Illinois 62201-1069

Application No.: 83120053
Applicant's Designation:
Subject: Two TWI-2000 Incinerators
Date Issued: September 2, 1986
Location: #7 Mobile Avenue, Sauget

I.D. No.: 163121AAP
Date Received: June 9, 1986

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of two TWI-2000 Series 2 Hazardous Waste Incinerators one with a Joy Spray Dry Adsorber and fabric filter, and the second unit with a Venturi Scrubber, Cyclonic Water Gas Separator, Induced Draft Fan, and Exhaust Expansion Tank as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. The incinerator when constructed shall include a Waste Feed Interlock System to insure that waste is not fed to the incinerator unless all critical operating parameters are with acceptable limits. As part of this system stack monitors shall be installed on each incinerator for Oxygen, Carbon Monoxide, and Hydrocarbons. For the incinerator with the SDA the following two additional emission monitors are required: Broken Bag Detector and hydrogen chloride monitor.

2. Particulate matter emissions from the incinerator shall not exceed 0.08 grains per dry standard cubic foot of gas discharged to the atmosphere, pursuant to 35 Ill. Adm. Code 121.181(b).

3. Carbon monoxide emissions from the incinerator shall not exceed 500 parts per million, corrected to 50 percent excess air, pursuant to 35 Ill. Adm. Code 216.141.

4. Hydrogen chloride emissions from incinerators 2 and 3 shall not exceed 4 lbs/hr or the control devices shall demonstrate a minimum HCL removal efficiency of 99%.

5. The new incinerators shall be constructed and operated with a waste cutoff interlock system which will prevent introduction of waste into the incinerator when any of the following events have occurred.

   a. I.D. fan failure.

   b. Atomizing air pressure below 10 psig.

   c. Incinerator chamber pressure 2" w.c. above atmospheric for more than 5 seconds.

   d. Emergency stack opens.

   e. Failure to sustain operating parameters specified in special condition 3.

   f. Burner failure in the primary or secondary chamber.

   g. When primary chamber temperature falls below 1500°F or secondary chamber exceeds 2275°F.

   h. Carbon monoxide concentration exceeds 500 ppm or exceed 50 ppm for more than three minutes.

<u>For The Incinerator With A Venturi Scrubber</u>

   i. Quench water flow below 100 gpm.

   j. Venturi scrubber water below 37 gpm, pressure drop across Venturi scrubber less than 21" w.c., scrubber pH less than 6 and flue gas temperature entering the scrubber greater than 180°F.

<u>For The Incinerator With A Spray Dryer Adsorber</u>

   k. Loss of slurry flow to SDA.

   l. High hydrogen chloride concentration in the stack.

   m. High opacity as indicated by the broken bag detector.

   n. High inlet temperature to the fabric filter.

6. The incinerators and associated air pollution control equipment shall be constructed such that the values of the parameters being monitored are displayed for operating personnel.

7. Operation of the incinerator utilizing auxiliary fuel will be limited as to composition and incinerator operating conditions which will meet all applicable regulations. Such a request should be incorporated in the trial burn plan.

8. Trade Waste Incineration shall submit as-built plans and specifications to the Agency as part of their operating permit application.

9. Prior to operation the new units, 2 and 3, shall be tested pursuant to an Agency approved trial burn plan. Trade Waste Incineration shall submit a detailed trial burn plan for Agency approval prior to startup. The trial burn plan shall provide for demonstration of the incinerators' destruction and removal efficiency, and particulate matter, carbon monoxide, organic material, and hydrogen chloride emissions throughout the range of waste characteristics and incinerator operating parameters for which an operating permit will be sought. Such trial burn plan should also indicate period of operation of incinerators during shakedown and testing. Standard condition 9 which allows 30 days for shakedown and testing, is hereby superceded by this condition.

   An operating permit will only be issued for these incinerators after a trial burn has demonstrated compliance with all applicable regulations. Based upon trial burn operation and waste material burned, the operating permit may limit the incinerator operating parameters and the composition of the incinerator's waste feed.

10. As part of the trial burn plan, Trade Waste Incineration shall propose procedures for maintaining operating records. Such procedures shall include appropriate notification to the Agency and action to be taken by operating personnel in the event of equipment malfunction or breakdown.

11. Emissions of particulate matter (TSP), sulfur oxides (SO2), nitrogen oxides (NOx), organic material (OM) and carbon monoxide (CO) shall not exceed the amounts specified in the Table below.

Emission Source	Annual Emissions (Tons/Year) TSP	SO2	NOX	OM	CO
Existing Incinerator	15.0	7.7	4.0	0.9	6.6
New Incinerators	30.0	15.4	8.0	1.8	13.2
Storage Operations				6.9	

These limits are based on the potential emissions of the incinerators and storage as indicated in the permit application.

Bharat Mathur, P.E.
Manager, Permit Section
Division of Air Pollution Control

BM:JDC:jmm/1857F/25-27

cc: Region 1

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Trade Waste Incineration, A Division of
Chemical Waste Management
Attention: James L. Gary
7 Mobile Avenue
Sauget, Illinois 62201-1069

Application No.: 87100024 I.D. No.: 163121AAP
Applicant's Designation: INCIR Date Received: May 24, 1988
Subject: TWI 2000 Series 2, Incinerator
Date Issued: August 19, 1988
Location: 7 Mobile Avenue, Sauget, Illinois

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of Incinerator #3 Model TWI 2000 with associated Dry Scrubber as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Particulate matter emissions for the incinerator shall not exceed 0.08 grains per dry standard cubic foot of the gas discharged to the atmosphere, pursuant to 35 Ill. Adm. Code 121.181(b).

2. Carbon monoxide emissions from the incinerator shall not exceed 500 parts per million corrected to 50 percent excess air, pursuant to 35 Ill. Adm. Code 216.141.

3. The incinerator shall be equipped with sensors to monitor the following parameters:

   a. Upper and lower combustion chamber exit gas temperature.
   b. Upper and lower combustion chamber pressure.
   c. Spray dryer adsorber inlet temperature.
   d. Spray dryer adsorber outlet temperature.
   e. Lime slurry head tank liquid level.
   f. Water pressure to slurry head tank makeup.
   g. Baghouse tube sheet pressure drop.
   h. Combustion stack gas flow rate.
   i. Stack gas oxygen concentration.

j. Stack gas carbon monoxide concentration.
k. Stack gas total hydrocarbon concentration.
l. Stack gas HCL concentration.
m. Stack gas opacity.
n. Liquid and/or sludge waste flow rate into the incinerator.
o. Solid waste charged.
p. Primary fuel pressure.
q. Combustion air pressure.
r. Primary Burner & Pilot flame.
s. Secondary Burners & Pilots flames.
t. Emergency stack latch.

4. The incinerator shall be designed and constructed to operate with an automatic waste feed cutoff interlock system which will prevent the introduction of waste into the incinerator when operating outside the permitted range of parameters.

   a. Startup range of parameters are established based upon design specifications and performance tests conducted on Incinerator Unit 2 and can be changed after successful stack test demonstration on Unit 3.

      (1) Primary chamber below 1600°F.
      (2) Secondary chamber below 1800°F.
      (3) Primary or secondary chamber above atmospheric pressure.
      (4) Spray dryer adsorber inlet greater than 2200°F.
      (5) Spray dryer adsorber outlet greater than 400°F or below 370°F.
      (6) Low liquid level in lime slurry head tank.
      (7) Low makeup water pressure into slurry heat tank.
      (8) Baghouse tube sheet pressure drop greater than 10 inches water column.
      (9) Combustion stack gas flow less than 5,000 acfm or greater than 15,000 acfm.
      (10) Oxygen concentration less than 6% by volume.
      (11) Carbon monoxide concentration greater than 500 ppm.
      (12) Carbon monoxide concentration greater than 50 ppm for 3 minutes.
      (13) Total hydrocarbon concentration greater than 100 ppm corrected to 7% oxygen.
      (14) HCl concentration greater than 100 ppm for 1 hour.
      (15) Opacity greater than 10%.
      (16) Primary fuel pressure below 30 psig.
      (17) Combustion air pressure below 10 inches W.C.
      (18) Primary burner failure.
      (19) Secondary burner failure.
      (20) Emergency stack open.

b. Operating parameters will be established based upon evaluation of actual operation and measured emissions during a trial burn.

5. The incinerator and associated air pollution control equipment shall be constructed such that the values of the parameters monitored and/or indicator of acceptable status are displayed for operating personnel with audible and visual alarms.

6. The Permittee shall submit as built plans of the incinerator and air pollution control equipment as part of the operating permit application.

7. The Permittee shall not initiate the start-up of the incinerator without written approval from the Agency. This special condition supercedes standard condition 6(b).

8. Stack emission tests shall be conducted on this Unit 3 Incinerator to establish emission rates and compliance with the applicable regulations. The required stack tests are to be conducted by an independent tester.

a. Emission tests are required for the following pollutants:

(1) Particulate matter.
(2) Hydrogen chloride.
(3) Nitrogen oxides.
(4) Carbon Monoxide.
(5) Principal organic hazardous components.

b. The Permittee shall submit a stack test plan at least 60 days in advance for Agency approval. The plan shall contain detailed plans and procedures.

c. Written notice of the scheduled dates for compliance stack testing shall be given at least 30 days in advance to the Agency. Final notice shall be given verbally not less than 7 days before emission testing begins. The required notice shall be given to the following:

Illinois Environmental Protection Agency
Attn: Permit Section Manager
Division of Air Pollution Control
P.O. Box 19276
Springfield, Illinois 62794-9276
217/782-2113

Illinois Environmental Protection Agency
Attn: Source Emission Test Specialist
Division of Air Pollution Control
The Intercontinental Center
1701 First Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control - Regional Office
2009 Mall Street
Collinsville, Illinois 62234
618/345-0700

9. Prior to startup, the Permittee shall submit instrumentation and monitoring specifications. A proposal for the details of record keeping and report formats used to show compliance with the limitations of the operating parameters required to be monitored in special condition 3 of this construction permit shall be submitted to the Agency for approval.

   a. The instrumentation and data logging equipment shall provide for storage of 100% of the incinerator parameters and stack monitored results in a computer readable format. Copies shall be made available to the Agency in a suitable computer readable format.

   b. The data logging equipment shall also provide for recording waste analysis parameter for as burned waste streams.

   c. The data logging equipment shall provide real time access to the incinerator operating parameters through a telecommunication computer port.

   d. The proposal shall set forth the hardware and software specifications for the information system along with available options in report formats and data exchange media.

   e. The permittee shall install a computer linkup system with IEPA Springfield, IEPA Collinsville and some location with public access. Such a system and location will require Agency approval.

10. Prior to startup, the Permittee shall submit details of an operator training program for Agency approval.

11. Prior to startup, the Permittee shall submit for Agency approval, specifications for on-site security including video cameras, monitoring cabinet locks and seals and details of security fencing.

12. Emissions of particulate matter (TSP), sulfur oxides (SO_2), nitrogen oxides (NO_x), organic material (OM), and carbon monoxide (CO) shall not exceed the amounts specified in the Table below.

	Annual Emissions (Tons/Year)				
Emission Source	TSP	SO2	NOx	OM	CO
Incinerator Unit 1	15.0	7.7	4.0	0.9	6.6
Incinerator Unit 2	15.0	7.7	4.0	0.9	6.6
Incinerator Unit 3	15.0	7.7	4.0	0.9	6.6
Incinerator Unit 4*	16.92	50.76	61.6	3.1	13.68
Waste Storage	-	-	-	-	-

*These limits are established based on 7205 hours of operation per year and average emission rates given in the application. These limits will be revised after the stack test results are reviewed.

13. Prior to startup, the permittee shall provide details of the Quality Assurance/Quality Control programs for the monitoring systems specified in Special Condition 3 above for Agency approval.

Please note that the start-up and trial burn plan as submitted with the application is not acceptable. Plan deficiencies will be identified at a later time.

Terry A. Sweitzer

Terry A. Sweitzer, P.E.
Manager, Permit Section
Division of Air Pollution Control

TAS:JDC:ds:5035H/32-36

cc: Region 3

DIRECTORY
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL

July 1, 1985

For assistance in preparing a permit application contact the Permit Section,

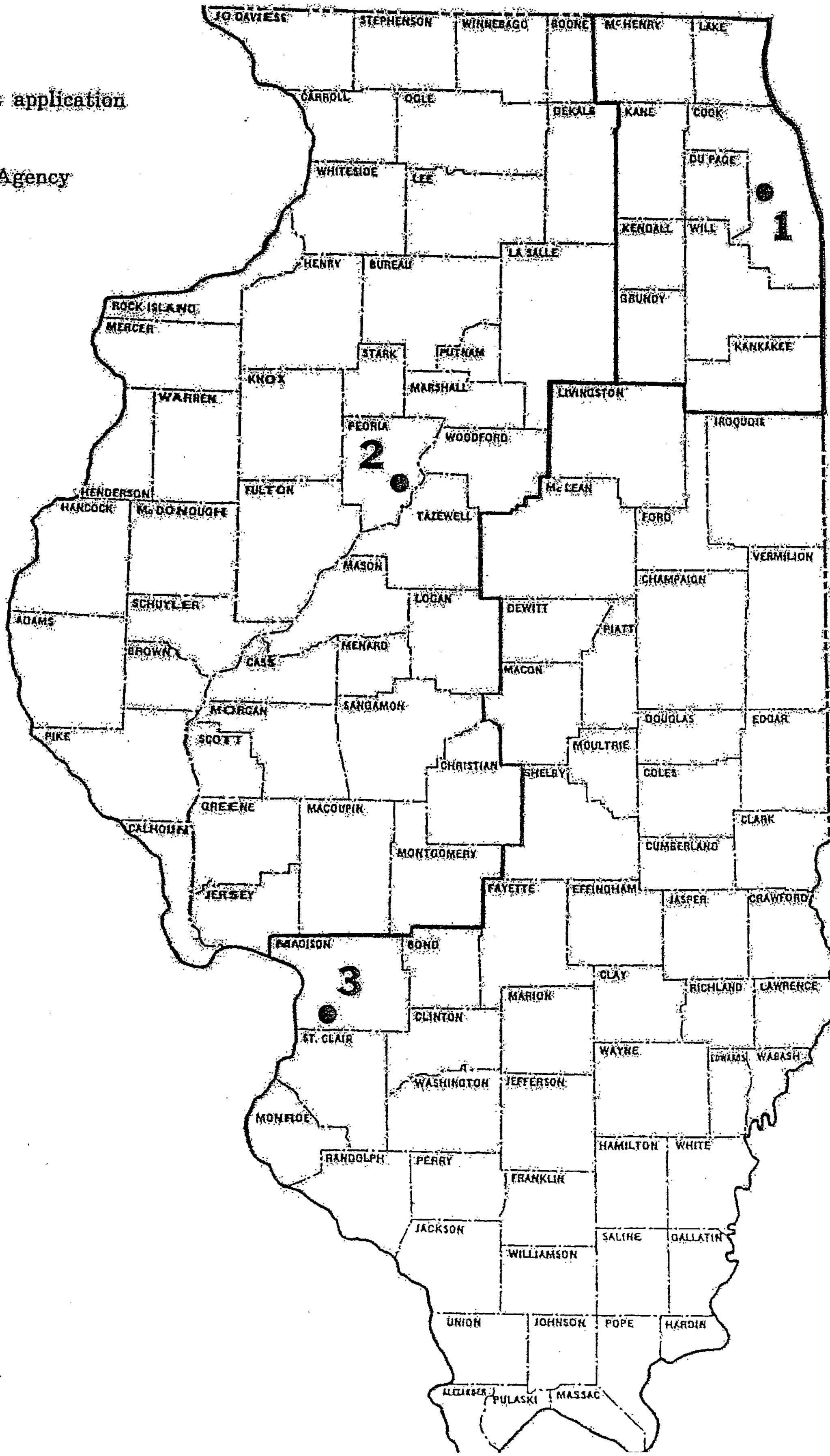
Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section
2200 Churchill Road
Springfield, Illinois 62706
(217) 782-2113

or a regional office of the Field Operations Section. The regional offices and their areas of responsibility are shown on the map. The addresses and telephone numbers of the regional offices are as follows:

Illinois EPA
Region 1
Intercontinental Center
1701 S. 1st Avenue
Maywood, Illinois 60153
(312) 345-9780

Illinois EPA
Region 2
5415 North University
Peoria, Illinois 61614
(309) 691-2200

Illinois EPA
Region 3
2009 Mall Street
Collinsville, Illinois 62234
(618) 345-0700



Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Trade Waste Incineration
A Division of Chemical Waste Management
Attn: James L. Gary
7 Mobil Avenue
Sauget, Illinois 62201

Application No.: 88010001 I.D. No.: 163121AAP
Applicant's Designation: INCIN #4 Date Received: March 22, 1988
Subject: Transportable Rotary Kiln Incinerator
Date Issued: August 3, 1988
Location: 7 Mobile Avenue, Sauget, IL

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a Transportable Rotary Kiln Incinerator Unit #4 equipped with a dry scrubber and a baghouse, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Particulate matter emissions from the incinerator shall not exceed 0.08 grains per dry standard cubic foot of the gas discharged to the atmosphere, pursuant to 35 Ill. Adm. Code 121.181(b).

2. Carbon monoxide emissions from the incinerator shall not exceed 500 parts per million corrected to 50 percent excess air, pursuant to 35 Ill. Adm. Code 216.141.

3. The incinerator shall be equipped with sensors to continuously monitor the following parameters:

   a. Kiln and secondary combustion chamber exit gas temperature.
   b. Kiln and secondary combustion chamber pressure.
   c. Spray dryer adsorber inlet temperature.
   d. Spray dryer adsorber outlet temperature.
   e. Lime slurry feed tank liquid level low.
   Water pressure to slurry feed tank makeup.
   Baghouse tube sheet pressure drop.
   Combustion stack gas flow rate.
   Stack gas oxygen concentration.
   Stack gas carbon monoxide concentration.
   Stack gas total hydrocarbon concentration.
   Stack gas HCL concentration.
   m. Stack gas infrared absorption.
   n. Liquid and/or sludge waste flow rate into the incinerator.
   Solid waste charged.

Primary fuel pressure.
Combustion air pressure.
Primary Burner & Pilot flame.
s. Secondary Burners & Pilots flame.
t. Emergency stack latch.

The incinerator shall be designed and constructed to operate with an automatic waste feed cutoff interlock system which will prevent the introduction of waste into the incinerator when operating outside the permitted range of parameters.

a. Startup range of parameters are established based upon design specifications and performance tests conducted on Incinerator Unit 2 and can be changed after successful stack test demonstration on Unit 4.

(1) Kiln chamber below 1600°F.
(2) Secondary chamber below 1800°F.
(3) Kiln or secondary chamber above atmospheric pressure.
(4) Spray dryer adsorber inlet greater than 2200°F.
(5) Spray dryer adsorber outlet greater than 400°F or below 370°F.
(6) Low liquid level in lime slurry feed tank.
(7) Low makeup water pressure into slurry feed tank.
(8) Baghouse tube sheet pressure drop greater than 10 inches water column.
(9) Oxygen concentration less than 6% by volume.
(10) Carbon monoxide concentration greater than 500 ppm.
(11) Carbon monoxide concentration greater than 50 ppm for 3 minutes.
(12) Total hydrocarbon concentration greater than 100 ppm corrected to 7% oxygen for one hour running average.
(13) HCl concentration greater than 100 ppm for 1 hour running average.
(14) Opacity greater than 10%.
(15) Primary fuel pressure below 30 psig.
(16) Combustion air pressure below 10 inches W.C.
(17) Kiln burner failure.
(18) Secondary burner failure.
(19) Emergency stack open.
(20) Combustion stack gas flow parameters will be established at a later stage.

b. Operating parameters shall be established based upon evaluation of actual operation and measured emissions during a trial burn.

5. The incinerator and associated air pollution control equipment shall be constructed such that the values of the parameters monitored and/or indicator of acceptable status are displayed for operating personnel with audible and visual alarms.

6. The Permittee shall submit as built plans for the incinerator and air pollution control equipment as part of the operating permit application.

7. The Permittee shall not initiate the start-up of the incinerator without written approval from the Agency. This special condition supersedes standard condition 6(b).

8. Stack emission tests shall be conducted on this Incinerator to establish emission rates and compliance with the applicable regulations. The required stack tests are to be conducted by an independent tester.

   a. Emission tests are required for the following pollutants:

      (1) Particulate matter.
      (2) Hydrogen chloride.
      (3) Nitrogen oxides.
      (4) Carbon monoxide.
      (5) Destruction of principal organic hazardous components.

   b. The Permittee shall submit a start-up plan and trial burn plans and procedures. Such a trial burn plan shall require the Agency's approval 30 days prior to any start-up and testing.

   c. Written notice of the scheduled dates for compliance stack testing shall be given at least 30 days in advance to the Agency. Final notice shall be given verbally not less than 7 days before emission testing begins. The required notice shall be given to the following:

Illinois Environmental Protection Agency
Attn: Permit Section Manager
Division of Air Pollution Control
P.O. Box 19276
Springfield, IL 62794-9276
217/782-2113

Illinois Environmental Protection Agency
Attn: Source Emission Test Specialist
Division of Air Pollution Control
Intercontinental Center
1701 First Avenue
Maywood, IL 60153
312/345-9780

Illinois Environmental Protection Agency
Division of Air Pollution Control—Regional Office
2009 Mall Street
Collinsville, IL 62234
618/345-0700

9. Prior to startup, the Permittee shall submit instrumentation and monitoring specifications. A proposal for the details of record keeping and report formats used to show compliance with the limitations of the operating parameters required to be monitored in special condition 3 of this construction permit shall be submitted to the Agency for approval.

   a. The instrumentation and data logging equipment shall provide for storage of 100% of the incinerator parameters and stack monitored results in a computer readable format. Copies shall be made available to the Agency in a suitable computer readable format.

   b. The data logging equipment shall also provide for recording waste analysis parameter for as burned waste streams.

   c. The data logging equipment shall provide real time access to the incinerator operating parameters through a telecommunication computer port.

   d. The proposal shall set forth the hardware and software specifications for the information system along with available options in report formats and data exchange media.

   e. The permittee shall install a computer linkup system with IEPA Springfield, IEPA Collinsville and some location with public access. Such a system and location will require Agency approval.

10. Prior to startup, the Permittee shall submit details of an operator training program for Agency approval.

11. Prior to startup, the Permittee shall submit for Agency approval, specifications for on-site security including video cameras, monitoring cabinet locks and seals and details of security fencing.

12. Emissions of particulate matter (TSP), sulfur oxides (SO_2), nitrogen oxides (NO_x), organic material (OM), and carbon monoxide (CO) shall not exceed the amounts specified in the Table below.

Emission Source	Annual Emissions (Tons/Year)				
	TSP	SO2	NOx	OM	CO
Incinerator Unit 4	16.92	50.76	61.6	3.1	13.68

These limits are established based on 7205 hours of operation per year and average emission rates given in the application. These limits will be revised after the stack test results are reviewed.

13. Prior to startup, the permittee shall provide details of the Quality Assurance/Quality Control programs for the monitoring systems specified in Special Condition 3 above for Agency approval.

The Agency will review when amended the start-up plan and trial burn plans when they are received.

Terry A. Sweitzer

Terry A. Sweitzer, P.E.
Manager, Permit Section
Division of Air Pollution Control

TAS:JDC:jmm/4932H/51-55

cc: Region 3

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

DIRECTORY
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL

July 1, 1985

For assistance in preparing a permit application contact the Permit Section,

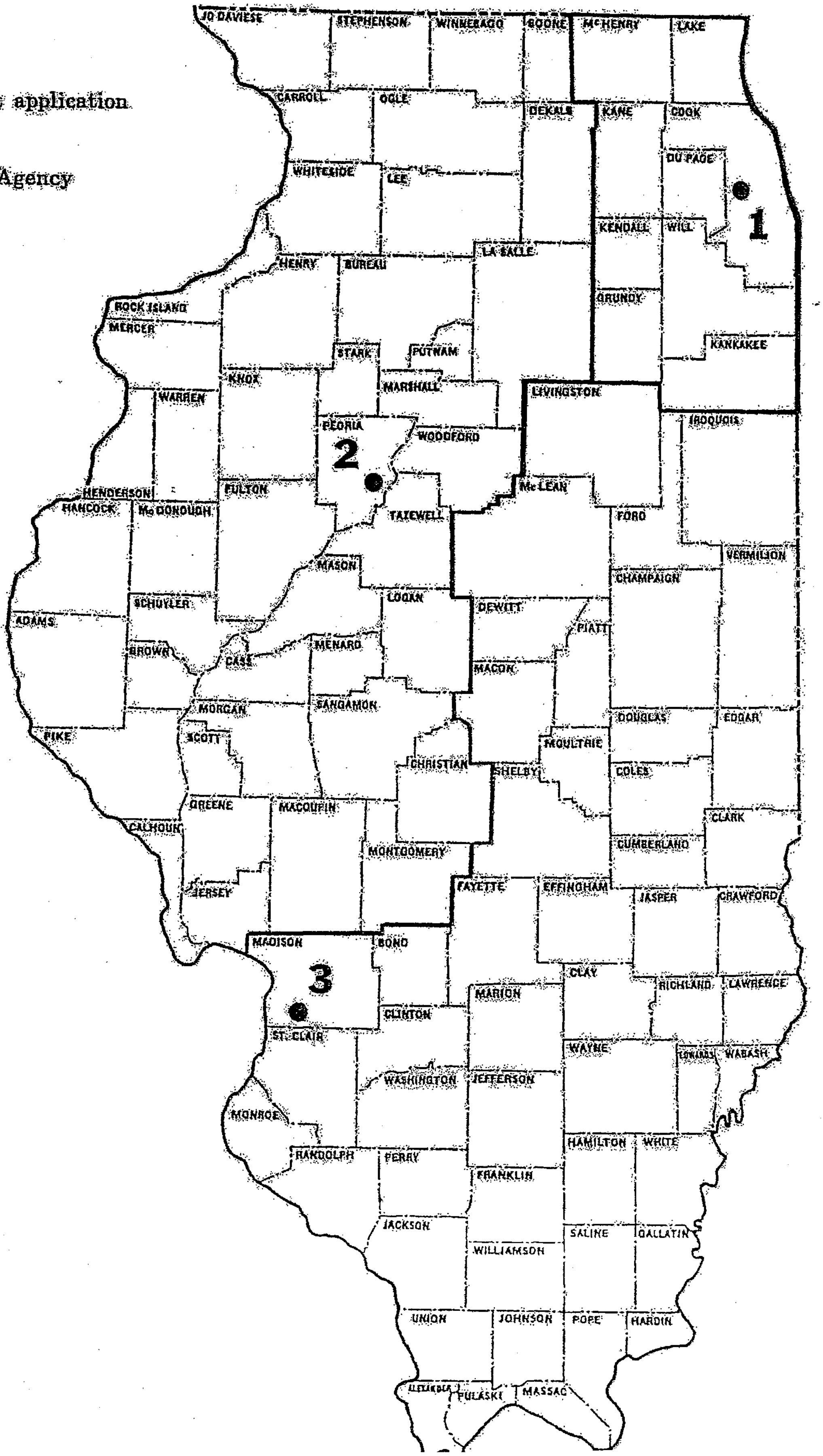
Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section
2200 Churchill Road
Springfield, Illinois 62706
(217) 782-2113

or a regional office of the Field Operations Section. The regional offices and their areas of responsibility are shown on the map. The addresses and telephone numbers of the regional offices are as follows:

Illinois EPA
Region 1
Intercontinental Center
1701 S. 1st Avenue
Maywood, Illinois 60153
(312) 345-9780

Illinois EPA
Region 2
5415 North University
Peoria, Illinois 61614
(309) 691-2200

Illinois EPA
Region 3
2009 Mall Street
Collinsville, Illinois 62234
(618) 345-0700



Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706
217/782-2113

JOINT CONSTRUCTION AND OPERATING PERMIT

PERMITTEE

Trade Waste Incineration
A Division of Chemical Waste Management, Inc.
Attn: James L. Gary
7 Mobile Avenue
Sauget, Illinois 62201-1069

Application No.: 88030101
Applicant's Designation: TANK FARM3
Subject: Tank Farm Number 3
Date Issued: June 27, 1988

Location: 7 Mobile Avenue, Sauget, IL

I.D. No.: 163121AAP
Date Received: March 29, 1988

Operating Permit Expiration Date: June 30, 1990

Permit is hereby granted to the above-designated Permittee to CONSTRUCT and OPERATE emission source(s) and/or air pollution control equipment consisting of ten 12,000 gal. and sixteen 30,000 gal. waste blending and storage tanks with carbon adsorption and associated truck and rail car unloading stations with vapor balance as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Operation of the emission source(s) included in this permit shall not begin until all associated air pollution control equipment has been constructed and is operational.

2. Within 60 days from the issuance of this permit a carbon adsorber breakthrough monitoring program shall be submitted for Agency approval. Operation of this tank farm shall not begin until the Agency has approved the breakthrough monitor program.

3. Emissions of organic material shall not exceed 2.5 tons/year. This limit is based on information provided in the application.

Terry A. Sweitzer

Terry A. Sweitzer, P.E.
Manager, Permit Section
Division of Air Pollution Control

TAS:JDC:jmm/4939H/54

cc: Region 3

RECEIVED JUN 28 1988

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

STANDARD CONDITIONS FOR OPERATING PERMITS

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special permit condition(s).

1. The issuance of this permit does not release the permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statutes and regulations of the United States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Agency has issued this permit based upon the information submitted by the permittee in the permit application. Any misinformation, false statement or mispresentation in the application shall be grounds for revocation under 35 Ill. Adm. Code 201.207.

3. a. The permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Agency and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The permittee shall allow any duly authorized agent of the Agency, upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emission of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities,

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
2200 CHURCHILL ROAD
SPRINGFIELD, ILLINOIS 62706

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter III 1/2, Section 1010 . Disclosure of this information is required. Failure to do so may result in a civil penalty up to $10,000.00 and an additio civil penalty up to $1,000.00 for each day the failure contin a fine up to $1,000.00 and imprisonment up to one year. Th form has been approved by the Forms Management Center.

ANNUAL EMISSION REPORT	FOR AGENCY USE ONLY

1a. NAME OF OWNER:		2a. NAME OF CORPORATE DIVISION OR PLANT (IF DIFFERENT FROM OWNER):	
1b. TELEPHONE NUMBER:		2b. STREET ADDRESS OF EMISSION SOURCE:	
1c. STREET ADDRESS OF OWNER:		2c. CITY OF EMISSION SOURCE:	2d. TELEPHONE NUMBER:
1d. CITY:		2e. COUNTY:	2f. LOCATED WITHIN CITY LIMITS: ☐ YES ☐ NO
1e. STATE:	1f. ZIP CODE:	2g. TOWNSHIP:	2h. ZIP CODE:

PERMIT INFORMATION AND REFERENCE

APPLICATION NUMBER	IDENTIFICATION NUMBER	IS THE DATA AND INFORMATION PREVIOUSLY SUBMITTED TRUE, CORRECT, CURRENT AND COMPLETE?	DURING THIS REPORTING PERIOD MAXIMUM EMISSIONS FROM THIS OPERATION HAVE: INCREASED	REMAINED THE SAME	DECREASED	PERCENTAGE BY WHICH EMISSIONS HAVE INCREASED OR DECREASED
		☐ YES ☐ NO				%
		☐ YES ☐ NO				%
		☐ YES ☐ NO				%
		☐ YES ☐ NO				%

4. PERIOD COVERED BY THIS REPORT: FROM ____________________ TO ____________________

5. THE ABOVE INFORMATION IS SUBMITTED IN ACCORDANCE WITH PCB REGS., CHAPTER 2, RULE 107(b) AS ADOPTED APRIL 14, 1972, AND THE INFORMATION IS TRUE, CORRECT, COMPLETE, AND CURRENT. THE SIGNATURE MUST BE THAT OF THE PERSON AUTHORIZED TO EXECUTE AN OPERATING PERMIT APPLICATION.

AUTHORIZED SIGNATURE ______________________________

A COPY OF THIS FORM MUST BE SUBMITTED FOR EACH PERMIT APPLICATION LISTED ABOVE.

THIS DOCUMENT IS NOT A PERMIT APPLICATION AND IS SOLELY FOR STATISTICAL AND INFORMATIONAL PURPOSES.

IF THE INFORMATION CONTAINED IN A LISTED PERMIT APPLICATION IS NO LONGER CORRECT, MATERIAL CORRECTING THE APPLICATION SHOULD BE SENT TO THE PERMIT SECTION OF THE DIVISION OF AIR POLLUTION CONTROL. IF THE CORRECTION IS DUE TO A MODIFICATION (INCREASE IN EMISSIONS) OR NEW EQUIPMENT [illegible]
CONSTRUCTION PERMIT APPLICATION [illegible]

DIRECTORY
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL

July 1, 1985

For assistance in preparing a permit application contact the Permit Section,

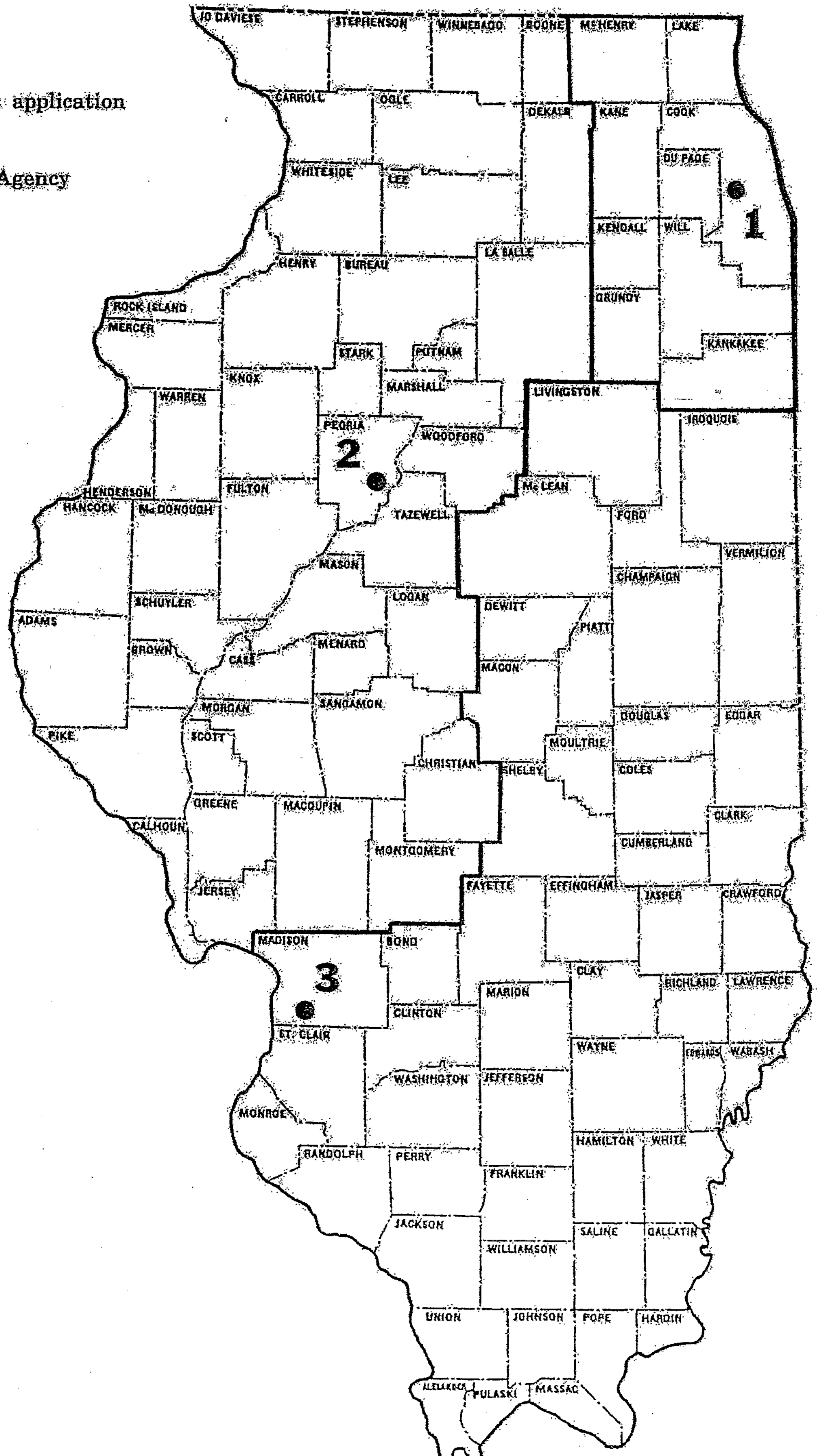
Illinois Environmental Protection Agency
Division of Air Pollution Control
Permit Section
2200 Churchill Road
Springfield, Illinois 62706
(217) 782-2113

or a regional office of the Field Operations Section. The regional offices and their areas of responsibility are shown on the map. The addresses and telephone numbers of the regional offices are as follows:

Illinois EPA
Region 1
Intercontinental Center
1701 S. 1st Avenue
Maywood, Illinois 60153
(312) 345-9780

Illinois EPA
Region 2
5415 North University
Peoria, Illinois 61614
(309) 691-2200

Illinois EPA
Region 3
2009 Mall Street
Collinsville, Illinois 62234
(618) 345-0700



Section 2.1 (C)(2) Modification of operating parameters limits (OPL's) Table.

Pursuant to the Request to Provide Information Pursuant to the Clean Air Act dated June 5, 2008 and subsequently revised on September 12, 2008, attached is a revised Operating Parameters Limits (OPL's) table that reflect the mercury, SVM and LVM OPL's defined in 40 CFR 63.1209.

The OPL's were modified based on the results of the performance testing that were approved by the USEPA, Region 5 on August 8, 2008 and conducted in August and September, 2008. These test plan results have been submitted as part of the Request from USEPA described above.

Veolia has extrapolated metal feedrate limits for mercury, SVM and LVM. These feedrates were extrapolated using the protocol provided by USEPA (attached) and included in the Performance Test Plan. The calculation sheets are included with this request. However, based on the extremely high System Removal Efficiencies (SRE's) achieved during this testing, Veolia has lowered the extrapolated metal feedrates for SVM and LVM at Unit 4 to account for historical metal feedrate data as defined in 40 CFR 1209(n)(2)(ii)(B)(2). Veolia has also lowered the extrapolated metal feedrates for SVM and LVM at Unit 2 to match those values at Unit 3 and again taking into account historical metal feedrate data as defined in 40 CFR 1209 (n)(2)(ii)(B)(2). Attached data sheets detail the extrapolated OPL's compared to the requested OPL's.

In order for extrapolation to be utilized, Veolia conducted these performance test using metal feedrates as defined in 40 CFR 1207 (f)(1)(x)(B), that were greater than "the historical range of normal metals feedrates" fed to the units over the last year. Included is a table that defines average feedrates for metals over the past year compared to the actual rates that were spiked and fed to the incinerators during the performance test. As is detailed, the metals fed to the incinerators during the performance test were significantly higher than the historical range of normal metal feeds over that year and in some cases were higher than the 12 maximum values.

As stated above, Veolia's extrapolated metal feedrates defined in the attached table used the extrapolated method defined in the Performance Test Plan as required by 40 CFR 1207 (f)(1)(x) (A) and given to Veolia by USEPA Region 5 as an approved method but also took into account historical metal feedrates for each unit in setting these extrapolated values as required by the 40 CFR 1209 (n)(2)(ii)(B)(2). Veolia is requesting approval of these extrapolated feedrates not only because it followed the requirements of the Regulations but it has been the Agency's practice of permitting extrapolation with other Region 5 incinerators. Veolia request that extrapolation be approved based on the merits of the methodology utilized, the metal federates at which the performance tests were conducted and the test results and because the requirements for extrapolation has been complied with as defined in the MACT regulation, 40 CFR 63.1200.

2. Permittee must operate Units 2, 3, and 4 under these operating parameters limits (OPL's) to demonstrate compliance with Subpart EEE.

Operating Parameters	Unit #2	Unit #3	Unit #4	AWFCO
Minimum primary combustion chamber temperature (63.1209(j)(1), (k)(2))	1,712°F	~~1,734~~°F 1,712	~~1,509~~°F 1,507	Minimum hourly rolling average
Minimum secondary combustion chamber temperature (63.1209(j)(1), (k)(2))	~~1,848~~°F 1,845	~~1,850~~°F 1,845	~~1,889~~°F 1,886	Minimum hourly rolling average
Maximum flue gas flowrate or production rate (63.1209(j)(2), (k)(3), (m)(2), (n)(5), (o)(2))	~~13,266~~ acf/min 15,147	~~13,111~~ acf/min 15,147	~~43,400~~ acf/min 38,086	hourly rolling averages
Maximum hazardous waste pumblable feedrate rate for each combustion chamber (63.1209(j)(3), (k)(4))	~~3,003~~ lbs/hr 3,123	~~4,160~~ lbs/hr 3,123	~~3,312~~ 3,256 lbs/hr for PCC and ~~1,787~~ 1,006 lbs/hr for SCC	hourly rolling averages
Maximum hazardous waste total feedrate rate for each combustion chamber (63.1209(j)(3), (k)(4))	~~4,149~~ lbs/hr 4,301	~~5,344~~ lbs/hr 4,301	~~17,907~~ 13,796 lbs/hr for PCC and ~~1,787~~ 1,006 lbs/hr for SCC	hourly rolling average basis
Operation of waste firing system for each location where waste is fed to the incinerator (63.1209(j)(4))	Minimum waste atomization pressure for low BTU waste - 15 psi	Minimum waste atomization pressure for low BTU waste - 15 psi	Minimum waste atomization pressure for low BTU waste - 15 psi	Instantaneous
Maximum temperature of the gas at the inlet (63.1209(k)(1), (n)(1))	420°F	420°F	~~435~~°F 434	hourly rolling average
Minimum carbon injection rate (63.1209(k)(6)(i))	N/A	N/A	~~6~~ lbs/hr 6.2	hourly rolling average
Minimum carrier fluid (gas or liquid) flowrate or pressure drop (63.1209(k)(6)(ii))	N/A	N/A	minimum high pressure: 4 psig	
			Maximum low pressure: 1 inch H_2O	hourly rolling average
The brand (i.e., manufacturer) and type of carbon used during the comprehensive performance test (63.1209(k)(6)(iii))	N/A	N/A	NORIT Americas Inc. DARCO® FGL	
Total feedrate of mercury	0.0174	0.0174	0.257	12-hour

Operating Parameters	Unit #2	Unit #3	Unit #4	AWFCO
(63.1209(l)(1)(i))				rolling average
Maximum ash federate (63.1209(m)(3))	673	~~913.4~~ lbs/hr 673	~~7,559~~ lbs/hr 8,777	12-hour rolling average
Total feedrate of semivolatile metals (63.1209(n)(2)(ii))	459	459	500	12-hour rolling average limits
Total feedrate of low volatile metals (63.1209(n)(2)(ii))	399	399	500	12-hour rolling average limits
Feedrate limits for low volatile metals in pumpable feedstreams (63.1209(n)(2)(vii))	368	368	427	12-hour rolling average limits
Feedrate of total chlorine and chloride in all feedstreams (63.1209(n)(4), (o)(1))	~~250~~ lbs/hr 229	~~247~~ lbs/hr 229	~~274~~ lbs/hr 252	12-hour rolling average
Minimum sorbent feedrate (63.1209 (o)(4)(i))	1.76 lb/lb Cl2	1.76 lb/lb Cl2	1.01 lb/lb Cl2	
Minimum carrier fluid flowrate or nozzle pressure drop for the spray dry adsorber (63.1209 (o)(4)(ii))	1.70 Gal/lb Cl2	1.70 Gal/lb Cl2	1.61 Gal/lb Cl2	
The brand (i.e., manufacturer) and type of sorbent used during the comprehensive performance test (63.1209 (o)(4)(iii)(A))	Mississippi Lime Company Hydrated Lime Code MR200	Mississippi Lime Company Hydrated Lime Code MR200	Mississippi Lime Company Hydrated Lime Code MR200	
Maximum combustion chamber pressure (63.1209(p))	-0.01 inch H_2O	-0.01 inch H_2O	-0.01 inch H_2O	5 seconds for units 2 and 3 and instantaneous for unit 4

3. Compliance with standards [40 C.F.R. § 63.1206(b)(1)]
The emission standards and operating requirements set forth derived from Subpart EEE apply at all times except:

(a) During periods of startup, shutdown, and malfunction; and

(b) When hazardous waste is not in the combustion chamber (i.e., the hazardous waste feed to the combustor has been cut off for a period of time not

USEPA Approved Extrapolation Method									
Test Data	Run	Stackflow (dscfm)	Oxygen (% dry)	LVM Feed (lb/hr)	Total LVM Emis. Rate (ER) (lb/hr)	SVM Feed (lb/hr)	Total SVM Emis. Rate (ER) (lb/hr)	Hg Feed (lb/hr)	Hg Emis. Rate (ER) (lb/hr)
Unit 2 (8/08)	1	5496	11.72					0.0052	0.000791
	2	5572	11.54					0.0044	0.000822
	3	5357	11.3					0.0046	0.000799
Unit 2 (9/08)	1	4698	11.21	47	0.000125	62	0.000398		
	2	5099	10.91	47	0.0000438	64	0.000144		
	3	5248	11.35	47	0.000101	63	0.000364		
Unit 3 (8/08)	1	5665	11.99	51	0.000388	65	0.000799	0.0045	0.000748
	2	5719	10.96	51	0.000308	66	0.00103	0.0056	0.000938
	3	5890	11.98	52	0.00022	65	0.000655	0.0051	0.000818
Unit 4 (8/08)	1	17280	12.27	55	0.000214	65	0.0009	0.0306	0.00153
	2	17255	12.13	55	0.000425	65	0.0013	0.0304	0.000996
	3	17189	11.63	55	0.000586	66	0.00116	0.0306	0.00108

USEPA Approved Extrapolation Method							
		[1]	[2]	[3]	[4]	Proposed	Proposed
Unit 2 (LVM)		Removal		Max. ER at 75%	LVM Feedrate	Extrapolation	Extrapolation
Em. Std.: 92 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit (Total)	Limit (Pump.)
(9/08)		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
	1	99.99973	6718	0.001734	652		
	2	99.99991	7075	0.001826	1959		
	3	99.99979	7614	0.001965	914		
	Avg	99.99981	7136	0.001841	1175	399	368
		[1]	[2]	[3]	[4]	Proposed	
Unit 2 (SVM)		Removal		Max. ER at 75%	SVM Feedrate	Extrapolation	
Em. Std.: 230 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
(9/08)		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	99.99936	6718	0.004334	675		
	2	99.99978	7075	0.004564	2029		
	3	99.99942	7614	0.004912	850		
	Avg	99.99952	7136	0.004604	1185	459	
		[1]	[2]	[3]	[4]	Proposed	
Unit 2 (Hg)		Removal		Max. ER at 75%	Hg Feedrate	Extrapolation	
Em. Std.: 130 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
(8/08)		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	84.79	8291	0.003024	0.0199		
	2	81.32	8246	0.003007	0.0161		
	3	82.63	7732	0.002819	0.0162		
	Avg	82.91	8090	0.002950	0.0174	0.017	
	Extrapolated metals feedrates calculated using USEPA approved method.						

USEPA Approved Extrapolation Method							
		[1]	[2]	[3]	[4]	Proposed	Proposed
Unit 3 (LVM)		Removal		Max. ER at 75%	LVM Feedrate	Extrapolation	Extrapolation
Em. Std.: 92 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	Limit (Pump.)
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
	1	99.99924	8802	0.002272	299		
	2	99.99940	7975	0.002058	341		
	3	99.99958	9142	0.002359	558		
	Avg	99.99940	8640	0.002230	399	399	368
		[1]	[2]	[3]	[4]	Proposed	
Unit 3 (SVM)		Removal		Max. ER at 75%	SVM Feedrate	Extrapolation	
Em. Std.: 230 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	99.99877	8802	0.005679	462		
	2	99.99844	7975	0.005145	330		
	3	99.99899	9142	0.005898	585		
	Avg	99.99873	8640	0.005574	459	459	
		[1]	[2]	[3]	[4]	Proposed	
Unit 3 (Hg)		Removal		Max. ER at 75%	Hg Feedrate	Extrapolation	
Em. Std.: 130 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	83.38	8802	0.003210	0.0193		
	2	83.25	7975	0.002908	0.0174		
	3	83.96	9142	0.003334	0.0208		
	Avg	83.53	8640	0.003151	0.0192	0.017	
	Extrapolated metals feedrates calculated using USEPA approved method.						

USEPA Approved Extrapolation Method							
		[1]	[2]	[3]	[4]	Proposed	Proposed
Unit 4 (LVM)		Removal		Max. ER at 75%	LVM Feedrate	Extrapolation	Extrapolation
Em. Std.: 92 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	Limit (Pump.)
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
	1	99.99961	27711	0.007151	1838		
	2	99.99923	27234	0.007028	910		
	3	99.99893	25683	0.006628	622		
	Avg	99.99926	26876	0.006936	1123	500	427
		[1]	[2]	[3]	[4]	Proposed	
Unit 4 (SVM)		Removal		Max. ER at 75%	SVM Feedrate	Extrapolation	
Em. Std.: 230 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	99.99862	27711	0.017878	1291		
	2	99.99800	27234	0.017571	879		
	3	99.99824	25683	0.016570	943		
	Avg	99.99829	26876	0.017340	1038	500	
		[1]	[2]	[3]	[4]	Proposed	
Unit 4 (Hg)		Removal		Max. ER at 75%	Hg Feedrate	Extrapolation	
Em. Std.: 130 ug/dscm		Efficiency (RE)	Stackflow	of Standard	OPL	Limit	
		(%)	(dscfm,7%O2)	(lb/hr)	(lb/hr)	(lb/hr)	
	1	95.00	27711	0.010105	0.202		
	2	96.72	27234	0.009931	0.303		
	3	96.47	25683	0.009365	0.265		
	Avg	96.06	26876	0.009801	0.257	0.257	
	Extrapolated metals feedrates calculated using USEPA approved method.						

1 Year Metals Data

06/01/07 thru 05/31/08

LVM	Unit 2 (lbs/hr)	Unit 3 (lbs/hr)	Unit 4 (lbs/hr)
12 Hr Max Value	77.74	38.88	77.29
12 Hr Avg Value	1.88	1.18	3.03
Std Dev	6.00	3.69	5.55
Avg + I StdDev	7.88	4.87	8.58
Avg + 2 StdDev	13.88	8.56	14.13
2008 Test Feed Rates	47	51	55

06/01/07 thru 05/31/08

SVM	Unit 2 (lbs/hr)	Unit 3 (lbs/hr)	Unit 4 (lbs/hr)
12 Hr Max Value	90.73	81.59	58.38
12 Hr Avg Value	1.75	1.98	3.81
Std Dev	5.71	6.80	6.09
Avg + I StdDev	7.46	8.78	9.90
Avg + 2 StdDev	13.17	15.58	15.99
2008 Test Feed Rates	63	65	65

06/01/07 thru 05/31/08

Hg	Unit 2 (lbs/hr)	Unit 3 (lbs/hr)	Unit 4 (lbs/hr)
12 Hr Max Value	0.005396	0.00416	0.05373
12 Hr Avg Value	0.0002972	0.0002433	0.007232
Std Dev	0.0007109	0.0005683	0.008943
Avg + I StdDev	0.001008	0.000812	0.016175
Avg + 2 StdDev	0.001719	0.0013799	0.025118
2008 Test Feed Rates	0.0047	0.0051	0.031

Example Extrapolation Metholagy

Utilization of Method 23 for Dioxin/Furan Emissions

The HWC MACT standard at 40 CFR §63.1208(b)(1)(i)(A) specifies the use of EPA SW-846 Method 0023A to determine compliance with the emission standard for dioxins and furans. Alternatively, the standard provides in 40 CFR §63.1208(b)(1)(i)(B) that Method 23 (40 CFR, Part 60, Appendix A) can be used, after approval by the Administrator. Lubrizol requests approval to use Method 23 to determine compliance with the emission standard for dioxins and furans when it conducts the WHRI CPT. Further explanation and justification for this alternative monitoring request is found in Section 6.1.

3.3 Mercury Feedrate Limit Determination

Lubrizol requested a waiver from conducting the performance test to document compliance with the mercury emission standard per 40 CFR 63.1207(m) and 63.7(h). This request was included in the 2002 CPT Plan and approved by US EPA on August 29, 2003. Lubrizol will utilize the maximum theoretical emission concentration (MTEC) approach to document on-going compliance with the mercury emission standard per 40 CFR 63.1207(m)(4). This approach is based on all the mercury fed to the combustor being emitted through the stack (i.e., do not take any credit for mercury removal in the APCS). The mercury concentration in all feedstreams will be determined per the feedstream analysis plan (FAP) required by 40 CFR 63.1209(c). The mercury feedrate of each feedstream will be determined per the discussion in Section 3.1. Based on historical analytical and waste feedrate data, the maximum mercury feedrate limit will be 0.0014 lb/hr. This OPL will be monitored on a 12-HRA basis and will be interlocked to the AWFCO system. Per 40 CFR 63.1207(m)(5) the full detection limit will be assumed for feedstreams where mercury is not detected..

In addition, a minimum flue gas flow rate (acfm) OPL has been determined. Based on flue gas parameters collected in conjunction with the 2003 CPT, the mercury emission limit of 130 µg/dscm at 7 percent oxygen and the maximum mercury feedrate of 0.0014 lb/hr; the minimum flue gas flow rate of 7738 acfm was calculated. The flue gas flow rate is continuously monitored and the minimum OPL will be interlocked to the AWFCO system. The minimum flue gas flow rate OPL will be monitored on a 12-HRA basis. These two OPLs in conjunction assure compliance with the mercury emission limit per 40 CFR 63.1207(m)(4).

3.4 Metals Feedrate Extrapolation Procedures

In order to establish an approach for controlling metal hazardous air pollutants, US EPA grouped the metals in categories by their relative volatility. The categories include low volatility metals (LVM), semi-volatile metals (SVM) and volatile metals. The LVM category includes arsenic, beryllium, and chromium. The SVM category consists of cadmium and lead. Mercury is the only volatile metal regulated by the MACT standard.

For the purpose of the CPT, one metal from each of the LVM and SVM categories will be spiked to the incinerator. The mercury feedrate limit is established and monitored based on the maximum theoretical emission concentration, as discussed in Section 3.3.

The emission limits for the LVM and SVM categories for existing incinerators are:

- LVM (total of As, Be, and Cr) 92 µg/dscm, corrected to 7% O_2
- SVM (total of Cd and Pb) 230 µg/dscm, corrected to 7% O_2

Lubrizol intends to spike metals during the CPT to assure that metal feedrates demonstrated during the CPT will allow for adequate flexibility based on historical metal feedrate data. However, due to variations in waste feedstreams, analytical uncertainties, and other factors, Lubrizol will continue to utilize the metals feedrate extrapolation procedure per 40 CFR 63.1209(n)(2)(ii) based on the prior approval of this technique by US EPA Region 5.

The Technical Implementation Document (TID) for US EPA's Boiler and Industrial Furnace (BIF) Regulations (US EPA, OSWER, EPA530-R-92-011, PB92-154 947, March 1992) provides a detailed discussion of the theoretical rationale for upward extrapolation of allowable metals feedrates based on the relationship of metals feedrates and emissions rates demonstrated during testing of a unit. The relationship of metals feedrates and resulting emission rates is complex and dependent on a number of factors including operating conditions, the air pollution control system, and the metal feedrate itself.

This guidance has proposed that three zones of relationship between feedrate and emission rate exist. These zones are: 1) vaporization, which characterizes conditions below saturation of the metal in the combustion gas, 2) entrainment, which describes the conditions during which metals are primarily entrained on the ash particles in the system, and 3) complex, which includes the effects from both solid and liquid feed streams beyond the point at which metals concentrations in the liquid stream alone are in excess of the gas saturation point. The guidance proposes that within each of these zones, the relationship of feedrate and emission rate is linear. Therefore, extrapolation of metals feedrates within a zone is performed simply, by assuming a linear relationship. Additionally, contributions of metals from solid and liquid streams are additive.

Lubrizol utilized the removal efficiency (RE) demonstrated during the 2002 CPT for LVM and SVM and 75% of the HWC MACT emission standard for the respective metal categories to determine the permitted LVM and SVM feedrate. The steps for utilizing extrapolation to calculate the LVM and SVM feedrate limits are detailed below.

1. Determine the demonstrated LVM and SVM RE based on data demonstrated during the CPT.

$$\text{LVM RE, \%} = \frac{(\text{LVM feedrate, lb/hr - LVM emission rate (ER), lb/hr}) \times 100}{\text{LVM feedrate lb/hr}}$$

$$\text{SVM RE, \%} = \frac{(\text{SVM feedrate, lb/hr - SVM emission rate (ER), lb/hr}) \times 100}{\text{SVM feedrate, lb/hr}}$$

2. Utilize the flue gas flowrate measured by the stack test crew (in dscfm) and correct to 7% oxygen using the following calculation:

*dscfm (measured) * (14 ÷ (21 – dry %O_2)) = dscfm, 7% O_2*

3. Calculate the maximum mass emission rate (ER) of LVM and SVM at 75 percent of the HWC MACT emission standard based on the gas flowrate demonstrated during the CPT:

*Max LVM ER, lb/hr = 69 μg/dscm, 7% O_2 * dscfm, 7% O_2 * 0.0283 dscm/dscf * 60 min/hr * 1 lb/453.6 g * 1 g/10^6 μg*

*Max SVM ER, lb/hr = 173 μg/dscm, 7% O_2 * dscfm, 7% O_2 * 0.0283 dscm/dscf* * 60 min/hr * 1 lb/453.6 g * 1 g/10^6 *μg*

4. Calculate the permitted LVM and SVM feedrate OPL based on the mass emission rates determined in step 3 and the LVM and SVM RE's demonstrated during the CPT.

$$\text{LVM feedrate OPL, lb/hr} = \frac{\text{Max LVM ER, lb/hr}}{((100 - \text{LVM RE, \%}) \div 100)}$$

$$\text{SVM feedrate OPL, lb/hr} = \frac{\text{Max SVM ER, lb/hr}}{((100 - \text{SVM RE, \%}) \div 100)}$$

The LVM calculation applies to pumpable LVM and total LVM, based on the respective feedrates of pumpable and total LVM demonstrated during the CPT. The US EPA approved this extrapolation procedure for the LVM and SVM feedrate OPL in a letter dated August 29, 2003.

3.5 Waiver of Monitoring in Certain Feedstreams

Lubrizol does not intend to perform feedstream monitoring for natural gas and process air during the up-coming CPT, as requested in the 2002 CPT plan and approved by US EPA Region 5. This section summarizes the justification of the initial waiver request.

In 40 CFR 63.1207(f)(1)(xi) and 63.1209(c)(5) the HWC MACT Standard requires documentation of the expected levels of the regulated constituents in natural gas, process air and feedstreams from vapor recovery systems. The WHRI utilizes fuel oil as the auxiliary fuel. Natural gas is only utilized during start-up as a pilot (see Section 4.8). Therefore, the natural gas discussion is not applicable. The regulated constituents in fuel oil are determined per the Feedstream Analysis Plan and the feedrate is continuously monitored. The contribution of this feedstream is included in calculation of the total regulated constituent feedrate to the WHRI by the PLC.

There are no feedstreams from vapor recovery systems associated with the WHRI. The combustion air (process air) for the unit is drawn from ambient air near the unit. Since the WHRI system is operated at less than ambient pressure, the fugitive emissions of regulated constituents from the unit will be negligible. Additionally, fugitive emissions from other processing equipment (tanks, pumps, etc.) are controlled per RCRA Subpart BB. Therefore, the feedrate of regulated constituents in the process air introduced to the WHRI system will be considered negligible as compared to the regulated constituents contained in the waste and fuel feedstreams.

3.6 Operation of Waste Firing System

In 40 CFR 63.1209(j)(4) the HWC MACT Standard requires that an operator must specify operating parameters and limits to ensure that good operation of each hazardous waste firing system is maintained to ensure compliance with the DRE standards. The required OPLs per 40 CFR 63.1209(j)(1) – (3) are:

- Minimum combustion chamber temperatures
- Maximum flue gas flowrate
- Maximum waste feedrate

Section 2.2 Material Processing Areas

Add provisions for the handling of Level 2 containers in these areas.

Veolia manages containers in the Material Processing Areas that exceed the container size limits for Level 1 controls. The processing of Level 2 containers at Veolia is identical to that of Level 1 containers. Waste treatment is not performed in the Material Processing areas. Level 2 containers are controlled according to the requirements at 40 CFR Part 63, Subpart PP "National Emission Standards for Containers;" as appropriate for Level 2 containers. Method 21 monitoring of Level 2 containers is performed as required to demonstrate no detectable emissions.

Please add the Emissions Limitations and Standards at Section 2.2(A), Work Practice and Operational Requirements at Section 2.2(C), Monitoring and Testing Requirements at Section 2.2(D), and Recordkeeping and Reporting requirements at Section 2.2(E.) as appropriate for management of Level 2 containers in these Material Processing Areas.

Section 2.4 Storage Tanks

Modify Monitoring and Testing section to reflect only those requirements applicable to tanks, which are not maintained at less than atmospheric pressure.

None of Veolia's waste storage tanks are maintained below atmospheric pressure. Title V Permit Section 2.4(D)(1) contains an appropriate requirement for annual testing of the tank cover and all openings pursuant to Benzene Waste Operations NESHAP 40 CFR 61.343(a)(1.) Following the appropriate requirement is an requirement derived from 40 CFR 61.343(a)(1)(C)(3), which reflects requirements for tanks maintained below atmospheric pressure. The last sentence of 2.4(D)(1) simply needs to be deleted.

Section 2.9 Insignificant Activities

Drum Sampling

Veolia proposes that emissions from drum sampling activities be treated as insignificant consistent with 40 CFR 71.5(c)(11) and 35 IAC 201.210. This activity does not emit more than 2 tons / year of regulated air pollutants, excluding HAP, nor does it emit any HAP in excess of 1000 lb per year. Likewise, it does not emit more than 1.0 lb / hour of any regulated pollutant excluding HAP, nor does it emit more than 0.1 lb / hour of any HAP in the absence of air pollution control equipment.

The following text is copied from the Title V Permit Application (Pages 37 – 39) discussion on the drum crushing operation:

> According to previous TRI reports submitted by the facility, the major regulated constituents processed by the facility that could emit VOM are toluene, methanol, xylene and methyl ethyl ketone. Methanol has a much higher vapor pressure than the other listed materials. For a very conservative estimate of VOM emissions from drum crushing activities, it was assumed that methanol residue was the VOM contain in, and released from the crushed drums. It was also assumed that then entire volume of the drum was filled with methanol vapor
>
> Drums crushed per year = 17,000
>
> Vapor pressure of methanol at 20°C = 97.48 mmHg = 1.88 psi
>
> Molecular weight of methanol = 32.04 lb/lb-mole
>
> Atmospheric pressure = 14.7 psi
>
> Density of air at 20°C = 0.0748 lb/ft^3
>
> Molecular weight of air = 28.97 lb/lb-mole
>
> Dimensions of a 55-gallon drum = 24 inch diameter x 33 inch high = 2 ft diameter x 2.75 ft high
>
> Volume of a 55-gallon drum = ∏ * (radius)^2 * height
> = 3.14 *(1)^2 * 2.75 = 8.635 ft^3

Raoult's Law: $pA = xA*P$ where pA = partial pressure of methanol in air
xA = mole fraction of methanol in air
P = pressure

1.88 psi = xA*14.7psi

xA = 0.128 = mole fraction of methanol in air

lb of air in drum = 8.635 ft^3 * 0.0748 lb/ft^3 = 0.646 lb air

moles of air = 0.646 lb air / 28.97 lb/lb-mol air = 0.0223 lb-mol air

mole fraction of methanol * lb-mol air = moles of methanol

0.128 * 0.0223 lb-mol air = 0.00285 lb-mol methanol

0.00285 lb-mol methanol * 32.04 lb/lb-mole methanol = 0.0914 lb methanol in drum

This provides the basis for discussion on drum sampling emissions; 0.0914 lb methanol vapor is contained in an empty 55 gallon drum.

If an empty drum is filled with 0.0914 lb methanol vapors, a conservative estimate would be that 5% of a drum filled with waste would be filled with vapor. If the entire vaporous content of the drum were evacuated during the short sampling time, 0.00457 lb of methanol vapor would be emitted. Note that this is a conservative figure as many drums of non-haz and non-regulated wastes are sampled which would not contain VOM. Many drums sampled are less than 55 gallons in size. Approximately half of the drums received contain solids, which emit little or no vapors.

If 0.00457 lb of methanol is emitted with every drum sampled, assume that half of that is attributed to HAP material; 0.002285 lb HAP per drum.

Veolia currently samples approximately 30 drums per hour, roughly 3 hours per day, 6 days per week; 936 hours / year.

30 drums / hour * 0.00457 lb methanol / drum = 0.1371 lb VOM / hour

0.1371 lb VOM / hour * 936 hours / year = 128 lb VOM / year

30 drums / hour * 0.002285 lb HAP / drum = 0.0686 lb HAP / hour

0.0686 lb HAP / hour * 936 hours / year = 64 lb HAP / year

The time spent sampling is directly related to the number of samples; this is to say that when the work load is increased, the hours spent sampling increases accordingly. The number of drums sampled per hour will not fluctuate, on the average, dramatically. Even if Veolia saw a 43% increase in the sampling rate (43 drums / hour) we would still be below the limits required to be an insignificant activity.

43 drums / hour * 0.00457 lb methanol / drum = 0.197 lb VOM / hour

0.197 lb VOM / hour * 936 hours / year = 184 lb VOM / year

43 drums / hour * 0.002285 lb HAP / drum = 0.0982 lb HAP / hour

0.0982 lb HAP / hour * 936 hours / year = 92 lb HAP / year

40 CFR 71.5(c)(11) limits insignificant activities to 2 TPY regulated air pollutant. Even if sampling the unlikely 43 drums / hour, there are not enough hours in a year for Veolia to exceed the emission limits given at 40 CFR 71.5(c)(11).

4000 lb VOM / year * 1 hr / 0.197 lb VOM = 20,305 hours / year

1000 lb HAP / year * 1 hr / 0.0982 lb HAP = 10,183 hours / year

Maximum hours / year : 8,736

Section 2.6 Gasoline Storage Tank

550 gallon Gasoline Storage Tank

Veolia proposes that emissions from the 550 gallon gasoline storage tank be treated as insignificant consistent with 40 CFR 71.5(c)(11) and 35 IAC 201.210. This tank does not emit more than 2 tons / year of regulated air pollutants, excluding HAP, nor does it emit any HAP in excess of 1000 lb per year. Likewise, it does not emit more than 1.0 lb / hour of any regulated pollutant excluding HAP, nor does it emit more than 0.1 lb / hour of any HAP in the absence of air pollution control equipment.

Veolia operates one 550 gallon gasoline storage tank. ***Historical records indicate that this tank has never had an annual throughput that exceeded 6,000 gallons; four of the past 5 years have shown annual throughputs of less than 5,000 gallons.*** Each year, emissions from this tank are calculated using the TANKS software available at the USEPA website. The version most recently used was TANKS 4.0.9d. The maximum annual gasoline emissions calculated by TANKS for this specific tank over the past 5 years is 81 lb. This includes both working and breathing losses.

In order to approach the 2 TPY regulated air pollutant limit, Veolia would need to handle 4 million gallons of gasoline in this tank according to TANKS calculations. At this throughput, 3,740 lb (1.87 T) of gasoline emissions would be released annually.

The constituents of gasoline vary significantly, but resources agree that toluene is the HAP that will be found at the highest concentration in gasoline. The most conservative estimates indicate that toluene will be present in gasoline at concentrations of less than 25%. Again, using the annual throughput of 4 million gallons, if one quarter of the total gasoline emissions are attributed to toluene, this would result in emissions of 935 lb toluene annually, which does not exceed the 1,000 lb HAP limit.

With respect to the 1.0 lb / hour limit on any non-HAP pollutant, assume that Veolia unexplainably triples the use of gasoline on-site and annual throughputs become 18,000 gallons. This would result in annual gasoline emissions of 147 lb according to TANKS. If the entire year's emissions were to occur *in a single week* (168 hours), this would still not exceed the 1.0 lb / hour limit.

Regarding the 0.1 lb / hr HAP limit, once again, use the exaggerated 18,000 gallon throughput example with toluene concentration being 25% of the total gasoline emissions. Toluene emissions would be 37 lb for the year. If the emissions were to occur *in two weeks* (336 hours) the emissions would barely exceed 0.1 lb Toluene per hour.

These extremely exaggerated scenarios should illustrate the fact that it is impossible for Veolia to approach any of the limits of an insignificant source. Consideration of the small tank size and minimal ACTUAL throughputs of this tank should clearly qualify it as an insignificant source.

Unit #2 Revised									
Run #1									
Date: 09/08/08									
Test Time: 14:36 to 16:46									
Run Length (minutes) --	130								
					PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		5260	1.3	1.63	0.58	0.1	160	0.00025	1500
PCC Low Btu		2850	0.002	0.66	0.03	0.003	0.06	0.00025	0.006
(Chromium Spike)		0	0	26.6	0	0	0	0	177000
PCC Sp Fdr		800	0.01	12.5	0.005	0.001	0.01	0.00025	0.33
Containerized Solids		180	0.08	63.4	313.92	196.2	92.21	0.25	1177.2
(Lead Spike)		0	0	63.9	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0
Totals									
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average				
(Batch CH08H00216)		Lb	Lb	Lb	Lb/Hr				
		1124.8	568	556.8	257				
Solids:		Number of	Total	Charges	Average	Pb Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		83	1773	38.3	818	100	245	474	
						2.6 lb/chg	6.4 lb/chg		
						62.1% Pb	89.8% Cl2		

Unit #2 Revised										
Run #1										
Date: 09/08/08										
Test Time: 14:36 to 16:46										
Run Length (minutes) --	130									
		Average	Thermal	Chlorine	Ash	Lead	Cadmium	Arsenic	Beryllium	Chromium
		Feedrate	Loading	Loading	Loading	Loading	Loading	Loading	Loading	Loading
Waste Type		(lb/hr)	(MMBtu/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PCC High Btu		549	2.89	7.1	8.9	0.00	0.000	0.088	0.000	0.82
PCC Low Btu		1018	2.90	0.0	6.7	0.00	0.000	0.000	0.000	0.00
(Chromium Spike)		257	0.00	0.0	68.4	0.00	0.000	0.000	0.000	45.49
PCC Sp Fdr		244	0.20	0.0	30.5	0.00	0.000	0.000	0.000	0.00
Containerized Solids		474	0.09	0.4	300.2	0.15	0.093	0.044	0.000	0.56
(Lead Spike)		100	0.00	0.0	63.6	61.85	0.000	0.000	0.000	0.00
(Chlorine Spike)		245	0.01	220.2	1.2	0.00	0.000	0.000	0.000	0.00
Totals		2886	6.1	228	480	62.0	0.09	0.13	0.00	46.9

Unit #2 Revised										
Run #2										
Date: 09/09/08										
Test Time: 12:20 to 14:30										
Run Length (minutes) --	130									
					PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		4930	1.5	1.67	0.72	0.11	160	0.00025	1400
PCC Low Btu		1760	0.002	0.03	0.03	0.004	0.04	0.00025	0.0025
(Chromium Spike)		0	0	26.6	0	0	0	0	177000
PCC Sp Fdr		770	0.019	9.34	0.005	0.001	0.03	0.00025	0.12
Containerized Solids		320	0.16	60.8	234.96	156.64	88.11	0.25	949.63
(Lead Spike)		0	0	63.9	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0
Totals									
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average				
(Batch CH08H00216)		Lb	Lb	Lb	Lb/Hr				
		1076.6	522.9	553.7	256				
Solids:		Number of	Total	Charges	Average	Pb Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		85	2015	39.2	930	102	251	577	
						2.6 lb/chg	6.4 lb/chg		
						62.1% Pb	89.8% Cl2		

Unit #2 Revised										
Run #2										
Date: 09/09/08										
Test Time: 12:20 to 14:30										
Run Length (minutes) --	130									
Waste Type		Average Feedrate (lb/hr)	Thermal Loading (MMBtu/hr)	Chlorine Loading (lb/hr)	Ash Loading (lb/hr)	Lead Loading (lb/hr)	Cadmium Loading (lb/hr)	Arsenic Loading (lb/hr)	Beryllium Loading (lb/hr)	Chromium Loading (lb/hr)
PCC High Btu		549	2.71	8.2	9.2	0.00	0.000	0.088	0.000	0.77
PCC Low Btu		1103	1.94	0.0	0.3	0.00	0.000	0.000	0.000	0.00
(Chromium Spike)		256	0.00	0.0	68.0	0.00	0.000	0.000	0.000	45.23
PCC Sp Fdr		244	0.19	0.0	22.8	0.00	0.000	0.000	0.000	0.00
Containerized Solids		577	0.18	0.9	350.8	0.14	0.090	0.051	0.000	0.55
(Lead Spike)		102	0.00	0.0	65.2	63.34	0.000	0.000	0.000	0.00
(Chlorine Spike)		251	0.01	225.5	1.3	0.00	0.000	0.000	0.000	0.00
Totals		3082	5.0	235	517	63.5	0.09	0.14	0.00	46.5

Unit #2 Revised									
Run #3									
Date: 09/10/08									
Test Time: 09:44 to 11:53									
Run Length (minutes) --	129								
					PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		4780	1.6	1.01	2.1	0.16	240	0.00025	630
PCC Low Btu		1480	0.0025	0.01	0.03	0.005	0.04	0.00025	0.0025
(Chromium Spike)		0	0	26.6	0	0	0	0	177000
PCC Sp Fdr		240	0.01	6.41	0.005	0.002	0.005	0.00025	0.37
Containerized Solids		250	0.1	61.5	234.24	165.92	87.84	0.25	976
(Lead Spike)		0	0	63.9	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0
Totals									
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average				
(Batch CH08H00216)		Lb	Lb	Lb	Lb/Hr				
		1027.2	465.6	561.6	261				
Solids:		Number of	Total	Charges	Average	Pb Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		84	2071	39.1	963	102	250	612	
						2.6 lb/chg	6.4 lb/chg		
						62.1% Pb	89.8% Cl2		

Unit #2 Revised										
Run #3										
Date: 09/10/08										
Test Time: 09:44 to 11:53										
Run Length (minutes) --	129									
Waste Type		Average Feedrate (lb/hr)	Thermal Loading (MMBtu/hr)	Chlorine Loading (lb/hr)	Ash Loading (lb/hr)	Lead Loading (lb/hr)	Cadmium Loading (lb/hr)	Arsenic Loading (lb/hr)	Beryllium Loading (lb/hr)	Chromium Loading (lb/hr)
PCC High Btu		549	2.62	8.8	5.5	0.00	0.000	0.132	0.000	0.35
PCC Low Btu		1055	1.56	0.0	0.1	0.00	0.000	0.000	0.000	0.00
(Chromium Spike)		261	0.00	0.0	69.5	0.00	0.000	0.000	0.000	46.23
PCC Sp Fdr		234	0.06	0.0	15.0	0.00	0.000	0.000	0.000	0.00
Containerized Solids		612	0.15	0.6	376.2	0.14	0.101	0.054	0.000	0.60
(Lead Spike)		102	0.00	0.0	64.9	63.08	0.000	0.000	0.000	0.00
(Chlorine Spike)		250	0.01	224.5	1.3	0.00	0.000	0.000	0.000	0.00
Totals		3062	4.4	234	532	63.2	0.10	0.19	0.00	47.2

Unit #2 Revised										
Run #1										
Date: 08/11/08										
Test Time: 14:40 to 16:50										
Run Length (minutes) --	130									
				PPM	PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Mercury	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		1310	3.4	6.83	0.018	1.4	0.1	12	0.015	5.1
PCC Low Btu		150	0.51	0.11	0.0068	0.05	0.04	0.5	0.0025	0.39
(Chromium Spike)		0	0	26.6	0	0	0	0	0	181800
PCC Sp Fdr		350	0.037	4	0.141	0.05	0.01	0.05	0.0025	0.025
Containerized Solids		1840	0.2	6.03	5.281	947.8	812.4	17.6	0.25	5348.3
(Lead Spike)		0	0	63.9	0	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0	0
(Mercury Spike)		0	0	0	987	0	0	0	0	0
Totals										
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average					
(Batch CH08E00643)		Lb	Lb	Lb	Lb/Hr					
		1225.6	676	549.6	254					
Solids:		Number of	Total	Charges	Average	Pb Spike	Hg Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		86	1823	39.7	841	103	1.23	230	507	
						2.6 lb/chg	0.031 lb/chg	5.8 lb/chg		
						62.1% Pb	987 ppm Hg	89.8% Cl2		

Unit #2 Revised											
Run #1											
Date: 08/11/08											
Test Time: 14:40 to 16:50											
Run Length (minutes) --	130										
Waste Type		Average Feedrate (lb/hr)	Thermal Loading (MMBtu/hr)	Chlorine Loading (lb/hr)	Ash Loading (lb/hr)	Mercury Loading (lb/hr)	Lead Loading (lb/hr)	Cadmium Loading (lb/hr)	Arsenic Loading (lb/hr)	Beryllium Loading (lb/hr)	Chromium Loading (lb/hr)
PCC High Btu		500	0.66	17.0	34.2	0.00001	0.00	0.000	0.006	0.000	0.00
PCC Low Btu		1087	0.16	5.5	1.2	0.00001	0.00	0.000	0.001	0.000	0.00
(Chromium Spike)		254	0.00	0.0	67.5	0.00000	0.00	0.000	0.000	0.000	46.12
PCC Sp Fdr		225	0.08	0.1	9.0	0.00003	0.00	0.000	0.000	0.000	0.00
Containerized Solids		507	0.93	1.0	30.6	0.00268	0.48	0.412	0.009	0.000	2.71
(Lead Spike)		103	0.00	0.0	65.9	0.00000	64.09	0.000	0.000	0.000	0.00
(Chlorine Spike)		230	0.01	206.7	1.2	0.00000	0.00	0.000	0.000	0.000	0.00
(Mercury Spike)		1.23	0.00	0.0	0.0	0.00121	0.00	0.000	0.000	0.000	0.00
Totals		2907	1.8	230	209	0.0039	64.6	0.41	0.02	0.00	48.8

Unit #2 Revised										
Run #2										
Date: 08/12/08										
Test Time: 11:05 to 13:16										
Run Length (minutes) --	131									
					PPM	PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Mercury	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		2890	3.4	7	0.0425	1.3	0.1	11	0.015	4.7
PCC Low Btu		25	0.5	0.03	0.0016	0.05	0.01	0.2	0.0025	0.12
(Chromium Spike)		0	0	26.6	0	0	0	0	0	181800
PCC Sp Fdr		840	0.005	8.48	0.006	0.05	0.01	0.05	0.0025	0.22
Containerized Solids		1690	0.33	6.01	4.871	960.4	754.6	9.604	0.25	5350.8
(Lead Spike)		0	0	63.9	0	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0	0
(Mercury Spike)		0	0	0	667	0	0	0	0	0
Totals										
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average					
(Batch CH08E00643)		Lb	Lb	Lb	Lb/Hr					
		812.9	252.8	560.1	257					
Solids:		Number of	Total	Charges	Average	Pb Spike	Hg Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		86	1806	39.4	827	102	1.22	228	495	
						2.6 lb/chg	0.031 lb/chg	5.8 lb/chg		
						62.1% Pb	667 ppm Hg	89.8% Cl2		

Unit #2 Revised											
Run #2											
Date: 08/12/08											
Test Time: 11:05 to 13:16											
Run Length (minutes) --	131										
		Average Feedrate	Thermal Loading	Chlorine Loading	Ash Loading	Mercury Loading	Lead Loading	Cadmium Loading	Arsenic Loading	Beryllium Loading	Chromium Loading
Waste Type		(lb/hr)	(MMBtu/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
PCC High Btu		499	1.44	17.0	34.9	0.00002	0.00	0.000	0.005	0.000	0.00
PCC Low Btu		1010	0.03	5.1	0.3	0.00000	0.00	0.000	0.000	0.000	0.00
(Chromium Spike)		257	0.00	0.0	68.2	0.00000	0.00	0.000	0.000	0.000	46.64
PCC Sp Fdr		212	0.18	0.0	18.0	0.00000	0.00	0.000	0.000	0.000	0.00
Containerized Solids		495	0.84	1.6	29.8	0.00241	0.48	0.374	0.005	0.000	2.65
(Lead Spike)		102	0.00	0.0	65.4	0.00000	63.60	0.000	0.000	0.000	0.00
(Chlorine Spike)		228	0.01	205.2	1.1	0.00000	0.00	0.000	0.000	0.000	0.00
(Mercury Spike)		1.22	0.00	0.0	0.0	0.00081	0.00	0.000	0.000	0.000	0.00
Totals		2805	2.5	229	218	0.0033	64.1	0.37	0.01	0.00	49.3

Unit #2 Revised										
Run #3										
Date: 08/13/08										
Test Time: 10:39 to 12:47										
Run Length (minutes) --	128									
					PPM	PPM	PPM	PPM	PPM	PPM
Waste Type		Btu/lb	%Chlorine	%Ash	Mercury	Lead	Cadmium	Arsenic	Beryllium	Chromium
PCC High Btu		1640	3.2	6.54	0.04	1.1	0.1	17	0.015	4.1
PCC Low Btu		2000	0.46	0.09	0.0015	0.1	0.02	0.2	0.005	0.05
(Chromium Spike)		0	0	26.6	0	0	0	0	0	181800
PCC Sp Fdr		25	0.005	9.05	0.0092	0.05	0.01	0.05	0.0025	0.18
Containerized Solids		1480	0.17	6.62	4.86	840	720	9	0.25	5160
(Lead Spike)		0	0	63.9	0	621000	0	0	0	0
(Chlorine Spike)		25	89.8	0.5	0	0	0	0	0	0
(Mercury Spike)		0	0	0	548	0	0	0	0	0
Totals										
Chromic Acid :		Start Wgt	End Wgt	Total Wgt	Average					
(Batch CH08E00643)		Lb	Lb	Lb	Lb/Hr					
		725.4	188.2	537.2	252					
Solids:		Number of	Total	Charges	Average	Pb Spike	Hg Spike	Cl2 Spike	Waste	
		Charges	Weight	Per Hour	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	Lb/Hr	
		82	1734	38.4	813	100	1.19	223	489	
						2.6 lb/chg	0.031 lb/chg	5.8 lb/chg		
						62.1% Pb	548 ppm Hg	89.8% Cl2		

Unit #2 Revised											
Run #3											
Date: 08/13/08											
Test Time: 10:39 to 12:47											
Run Length (minutes) --	128										
Waste Type		Average Feedrate (lb/hr)	Thermal Loading (MMBtu/hr)	Chlorine Loading (lb/hr)	Ash Loading (lb/hr)	Mercury Loading (lb/hr)	Lead Loading (lb/hr)	Cadmium Loading (lb/hr)	Arsenic Loading (lb/hr)	Beryllium Loading (lb/hr)	Chromium Loading (lb/hr)
PCC High Btu		500	0.82	16.0	32.7	0.00002	0.00	0.000	0.009	0.000	0.00
PCC Low Btu		1033	2.07	4.8	0.9	0.00000	0.00	0.000	0.000	0.000	0.00
(Chromium Spike)		252	0.00	0.0	67.0	0.00000	0.00	0.000	0.000	0.000	45.78
PCC Sp Fdr		208	0.01	0.0	18.8	0.00000	0.00	0.000	0.000	0.000	0.00
Containerized Solids		489	0.72	0.8	32.4	0.00238	0.41	0.352	0.004	0.000	2.52
(Lead Spike)		100	0.00	0.0	63.9	0.00000	62.06	0.000	0.000	0.000	0.00
(Chlorine Spike)		223	0.01	200.2	1.1	0.00000	0.00	0.000	0.000	0.000	0.00
(Mercury Spike)		1.19	0.00	0.0	0.0	0.00065	0.00	0.000	0.000	0.000	0.00
Totals		2806	3.6	222	217	0.0031	62.5	0.35	0.01	0.00	48.3

Unit 2 Operating Parameter [Revised] Limits Set During August and September, 2008 Testing				
August, 2008	**Run 1**	**Run 2**	**Run 3**	**Average**
Mercury Feed (Lb/hr)	0.0039	0.0033	0.0031	0.0034
(Ave. of test run ave.'s)				
September, 2008	**Run 1**	**Run 2**	**Run 3**	**Average**
Baghouse Inlet Temp. (Deg F)	419	420	420	420
(Ave. of test run ave.'s)				
Stackflow (ACFM)	15196	15120	15124	15147
(Ave. of max. HRA's of each test run)				
Pumpable LVM Feed (Lb/hr)	46	46	47	46
(Ave. of test run ave.'s)				
Total LVM Feed (Lb/hr)	47	47	47	47
(Ave. of test run ave.'s)				
SVM Feed (Lb/hr)	62	64	63	63
(Ave. of test run ave.'s)				
Chlorine Feed (Lb/hr)	228	235	234	232
(Ave. of test run ave.'s)				

Recalculated Metal Concentrations in Solid Wastes
2008 Metals Emission Testing

Unit 2

		Reported Metals Concentration of Solid Waste Feeds							
Date	Run #	Arsenic (ppm)	Beryllium (ppm)	Chromium (ppm)	Lead (ppm)	Cadmium (ppm)	Mercury (ppm)	Moisture (%)	Solid (%)
8/11/2008	1	26	0.25	7900	1400	1200	7.8	32.3	67.7
8/12/2008	2	14	0.25	7800	1400	1100	7.1	31.4	68.6
8/13/2008	3	15	0.25	8600	1400	1200	8.1	40	60

		As Received Metals Concentration of Solid Waste Feeds						
Date	Run #	Arsenic (ppm)	Beryllium (ppm)	Chromium (ppm)	Lead (ppm)	Cadmium (ppm)	Mercury (ppm)	
8/11/2008	1	17.602	0.25	5348.3	947.8	812.4	5.2806	1/2 detection limit
8/12/2008	2	9.604	0.25	5350.8	960.4	754.6	4.8706	
8/13/2008	3	9	0.25	5160	840	720	4.86	

		Reported Metals Concentration of Solid Waste Feeds							
Date	Run #	Arsenic (ppm)	Beryllium (ppm)	Chromium (ppm)	Lead (ppm)	Cadmium (ppm)	Mercury (ppm)	Moisture (%)	Solid (%)
9/8/2008	1	94	0.25	1200	320	200	NA	1.9	98.1
9/9/2008	2	90	0.25	970	240	160	NA	2.1	97.9
9/10/2008	3	90	0.25	1000	240	170	NA	2.4	97.6

		As Received Metals Concentration of Solid Waste Feeds						
Date	Run #	Arsenic (ppm)	Beryllium (ppm)	Chromium (ppm)	Lead (ppm)	Cadmium (ppm)	Mercury (ppm)	
9/8/2008	1	92.214	0.25	1177.2	313.92	196.2	NA	1/2 detection limit
9/9/2008	2	88.11	0.25	949.63	234.96	156.64	NA	
9/10/2008	3	87.84	0.25	976	234.24	165.92	NA	

Notification of Compliance (NOC) Report

Veolia ES Technical Solutions, L.L.C. hereby submits the Notification of Compliance (NOC) Report in compliance with 40 CFR 63.1210(b) and 40 CFR 63.1207(j)

Applicable Rule:	40 CFR Part 63.1200, Subpart EEE — National Emission Standards for Hazardous Air Pollutants for Hazardous Waste Combustors. This NOC is being made in accordance with §63.9(h).

SECTION I
GENERAL INFORMATION

A. If you have been issued a Title V permit, do not complete this form. Submit your NOC in accordance with your Title V permit. [§63.9(h)(3)]

B. If you have not been issued a Title V permit, complete the remaining portions of this section and also complete Sections II-IX. [§63.9(h)(2)(i)]

C. Print or type the following information for each facility for which you are making notification of compliance status:

Operating Permit Number (OPTIONAL)	Facility I.D. Number (OPTIONAL)
V-IL-1716300103-08-01	ILD098642424

Responsible Official's Name/Title
Doug Harris

Street Address
#7 Mobile Ave.

City	State	ZIP Code
Sauget	IL	62201-1069

Facility Name (if different from Responsible Official's Name)
Veolia ES Technical Solutions, L.L.C.

Facility Street Address (If different than Responsible Official's Street Address)

Facility Local Contact Name	Title	Phone (OPTIONAL)
Doug Harris	General Manager	618-271-2804

City	State	ZIP Code
Sauget	IL	62201-1069

D. Indicate the relevant standard or other requirement that is the basis for this notification and the source's compliance date: (§63.9(b)(2)(iii))

Basis for this notification (relevant standard or other requirement)	Compliance Date (mm/dd/yy)
40 CFR 63.1200	**June 30, 2004**

SECTION II
CERTIFICATION *(Note: you may edit the text in this section as deemed appropriate)*

Based upon information and belief formed after a reasonable inquiry, I, as a responsible official of the above-mentioned facility, certify the information contained in this report is accurate and true to the best of my knowledge. The above-mentioned facility has complied with the relevant standard or and other applicable requirements referenced in the relevant standard. [§63.9(h)(2)(i)(G)]

Name of Responsible Official (Print or Type)	Title	Date (mm/dd/yy)
Doug Harris	General Manager	10/10/2008

Signature of Responsible Official

Doug Harris

SECTION III

Describe the methods you used to determine compliance. [§63.9(h)(2)(i)(A)]

RCRA Trial Burn Data from EPA approved testing as required by the RCRA Part B permit and testing conducted prior to the compliance date using all approved EPA methods was used to demonstrate compliance with all applicable emission standards defined in 40 CFR 63.1203. In addition, Performance Testing approved by USEPA, Region 5 on August 8, 2008 and conducted in August and September of 2008. See the attached Operating Parameters Tables and HWC MACT Emission Standards table for Units 2/3 and Unit 4, that define the operating parameters established during testing that ensures compliance with the performance standards.

SECTION IV

Describe the results of any performance tests, opacity or visible emission observations, continuous monitoring system (CMS) performance evaluations, and/or other monitoring procedures or methods that were conducted. [§63.9(h)(2)(i)(B)]

See attached test results that were used to develop the limits defined in the Operating Parameter Tables referenced in Section III of this report. These results also include monitoring methods and procedures. Also attached are the Facility's Continuous Emissions Monitoring System Quality Assurance Plan and Continuous Monitoring System Quality Control Program.

SECTION V

Describe the methods you will use to determine continuous compliance, including a description of monitoring and reporting requirements and test methods. [§63.9(h)(2)(i)(C)]

Continuous compliance is based on the operating parameter limits established from compliance testing, defined in the attached Operating Parameters Table referenced in Section III of this report. These incinerator operating parameters are monitored continuously to verify compliance by a process monitoring and control system. The details of these systems are defined in detail in Section 2.0, Incinerator Process description referenced in Section VIII of this report and attached.

SECTION VI

Describe the type and quantity of hazardous air pollutants (HAP) emitted by the source (or surrogate pollutants if specified in the relevant standard), reported in units and averaging times and in accordance with the test methods specified in the relevant standard. [§63.9(h)(2)(i)(D)]

See attached test results from compliance testing that was conducted to demonstrate compliance with the HAP's and other pollutants defined in Subpart EEE.

SECTION VII

If the relevant standard applies to both major and area sources, present an analysis demonstrating whether the affected source is a major source (using the emissions data generated for this notification. [§63.9(h)(2)(i)(E)]

This facility is a major source due to its applicability to the NESHAP regulations, specifically Subpart EEE and Subpart DD. Regardless of the facility's emission concentrations, this facility is a major source by definition.

SECTION VIII

Describe the air pollution control equipment (or method) for each emission point, including each control device (or method) for each hazardous air pollutant and the control efficiency (percent) for each control device (or method). [§63.9(h)(2)(i)(F)]

See attached Section 2.0, Incinerator Process Description from 2008 Performance Test Plans for Incinerators 2, 3 and 4 that describes the air pollution control equipment for each emission point. Also, see attached the compliance testing data defined in Section IV of this report that details the control efficiency for each control device.

SECTION IX

A. Did you submit an application for construction or reconstruction under §63.5(d) that contained preliminary or estimated data? [§63.9(h)(5)]

Yes ☐ No ☐ Not applicable ☐ (did not submit an application for construction or reconstruction).

B. If you answered yes, provide actual emission data or other corrected information below.

END OF FORM. ***<u>A Responsible Official must sign this form</u>*** **– See Section II.**

HWC MACT Emission Standards

Parameter	Units	Standard	Method of Compliance
Dioxin/Furan (D/F)	ng/dscm TEQ	0.20	Operating Parameter Limits
Mercury (Hg) *	ug/dscm	130	Operating Parameter Limits
Semivolatile Metals (SVM) Cadmium, Lead *	ug/dscm	240	Operating Parameter Limits
Low Volatile Metals (LVM) Arsenic, Beryllium, Chromium *	ug/dscm	97	Operating Parameter Limits
Carbon Monoxide (CO)	ppmv	100	Continuous Emissions Monitor
Hydrogen Chloride/Chlorine (HCl/Cl2)	ppmv	77	Operating Parameter Limits
Particulate	mg/dscm	34	Operating Parameter Limits

UNITS 2/3 OPERATING PARAMETERS

Operating Parameter	Units	Limits	Test Date	Performance Standards
Maximum Total Pumpable Waste (Hourly Rolling Total)	Lb/hr	3123	May, 2004	DRE, D/F
Maximum Total Hazardous Waste (Hourly Rolling Total)	Lb/hr	4301	May, 2004	DRE, D/F
Maximum Stack Gas Flow Rate (Hourly Rolling Average)	Acfm	15,147	Sept., 2008	DRE, D/F, Part., SVM, LVM
Minimum Primary Combustion Chamber Temperature (Hourly Rolling Average)	Deg F	1712	May, 2004	DRE, D/F
Minimum Secondary Combustion Chamber Temperature (Hourly Rolling Average)	Deg F	1845	Nov., 1996	DRE, D/F
Maximum Baghouse Inlet Temperature (Hourly Rolling Average)	Deg F	420	Aug., 2008	D/F, SVM, LVM
Max. Pump. Low Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	46	Sept., 2008	LVM
Max. Total Low Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	47	Sept., 2008	LVM
Maximum Semi Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	63	Sept., 2008	SVM
Maximum Mercury Feedrate (12 Hour Rolling Total)	Lb/hr	0.0047	Aug., 2008	Hg
Maximum Chlorine Feedrate (12 Hour Rolling Total)	Lb/hr	229	Aug., 2008	SVM, LVM HCl/Cl2
Maximum Ash Feedrate (12 Hour Rolling Total)	Lb/hr	673	Nov., 1996	Part.
Minimum Sorbent Feedrate (Hourly Rolling Average)	Lb/lb Cl_2	1.76	Nov., 1996	HCl/Cl2
Minimum Carrier Fluid Flowrate (Hourly Rolling Average)	Gal/lb Cl_2	1.70	Nov., 1996	HCl/Cl2

UNIT 4 OPERATING PARAMETERS

Operating Parameter	Units	Limits	Test Date	Performance Standards
Maximum Total Pumpable Waste (Hourly Rolling Total)	Lb/hr	PCC - 3256 SCC - 1006	Sept., 2003 Cond. 1	DRE, D/F
Maximum Total Hazardous Waste (Hourly Rolling Total)	Lb/hr	PCC – 13,796 SCC - 1006	Sept., 2003 Cond. 1	DRE, D/F
Maximum Stack Gas Flow Rate (Hourly Rolling Average)	Acfm	38,086	Aug., 2008	DRE, D/F, Part., SVM, LVM
Minimum Primary Combustion Chamber Temperature (Hourly Rolling Average)	Deg F	1507	Sept., 2003 Cond. 1	DRE, D/F
Minimum Secondary Combustion Chamber Temperature (Hourly Rolling Average)	Deg F	1886	Sept., 2003 Cond. 1	DRE, D/F
Maximum Baghouse Inlet Temperature (Hourly Rolling erage)	Deg F	434	Aug., 2008	D/F, SVM, LVM
Max. Pump. Low Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	47	Aug., 2008	LVM
Max. Total Low Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	55	Aug., 2008	LVM
Maximum Semi Volatile Metals Feedrate (12 Hour Rolling Total)	Lb/hr	65	Aug., 2008	SVM
Maximum Mercury Feed rate (12 Hour Rolling Total)	Lb/hr	0.031	Aug., 2008	Hg
Maximum Chlorine Feed rate (12 Hour Rolling Total)	Lb/hr	252	Aug., 2008	SVM, LVM, HCl/Cl2
Maximum Ash Feed Rate (12 Hour Rolling Total)	Lb/hr	8777	Dec., 1995	Part.
Carbon Injection Feedrate (Hourly Rolling Average)	Lb/hr	6.2	Aug., 2008	D/F, Hg
Minimum Sorbent Feedrate (Hourly Rolling Average)	Lb/lb Cl_2	1.01	Dec., 1995	HCl/Cl2
Minimum Carrier Fluid Flowrate (Hourly Rolling Average)	Gal/lb Cl_2	1.61	Dec., 1995	HCl/Cl2

UNIT 2
EMISSION RESULTS

Table 3-3 RM 29 Sampling Parameters and Emission Results – Week of August 11, 2008

Run No.		1	2	3	
Date		11-Aug-08	12-Aug-08	13-Aug-08	
Start Time	Units	14:40	11:05	10:39	
Stop Time		16:50	13:16	12:47	**AVGS**
Sampling Parameters –					
Barometric Pressure	in. Hg	29.60	29.55	29.50	29.61
Volume Metered	dcf	83.650	86.044	85.611	81.996
Sample Volume	dscf	76.750	80.233	78.036	78.340
Moisture	% v/v	39.9	40.1	41.4	40.5
O_2 at Stack	% dry	11.72	11.54	11.30	11.52
Avg. Stack Temp.	°F	369	370	358	365
Stack Flowrate	dscfm	5,495	5,572	5,357	5,475
Isokinetics	%	93	96	97	95
Mercury (Hg) –					
Quantity Collected	μg	83.5	89.4	87.9	87.0
Stack Conc. @ 7% O_2	μg/m³	58.0	58.2	57.4	**57.9**
Stack Emission Rate	lb/hr	7.91E-04	8.22E-04	7.99E-04	8.04E-04
	g/sec	9.96E-05	1.04E-04	1.01E-04	1.01E-04
Total Chromium (Cr) –	LVM				
Quantity Collected	μg	78.75	75.66	73.15	75.85
Stack Conc. @ 7% O_2	μg/m³	54.66	49.28	47.76	50.57
Stack Emission Rate	lb/hr	7.46E-04	6.95E-04	6.64E-04	7.02E-04
	g/sec	9.40E-05	8.76E-05	8.37E-05	8.84E-05
Cadmium (Cd) –	SVM				
Quantity Collected	μg	1.99	2.06	1.86	1.97
Stack Conc. @ 7% O_2	μg/m³	1.38	1.34	1.21	1.31
Stack Emission Rate	lb/hr	1.88E-05	1.89E-05	1.68E-05	1.82E-05
	g/sec	2.37E-06	2.38E-06	2.12E-06	2.29E-06
Lead (Pb) –	SVM				
Quantity Collected	μg	329.5	369.2	369.5	356.08
Stack Conc. @ 7% O_2	μg/m³	228.7	240.5	241.3	236.8
Stack Emission Rate	lb/hr	3.12E-03	3.39E-03	3.36E-03	3.29E-03
	g/sec	3.93E-04	4.27E-04	4.23E-04	4.14E-04
Arsenic (As) –					
Quantity Collected	μg	17.00	10.08	5.67	10.92
Stack Conc. @ 7% O_2	μg/m³	11.80	6.57	3.70	7.36
Stack Emission Rate	lb/hr	1.61E-04	9.26E-05	5.15E-05	1.02E-04
	g/sec	2.03E-05	1.17E-05	6.49E-06	1.28E-05
Beryllium (Be) –					
Quantity Collected	μg	0.20	0.20	0.20	0.20
Stack Conc. @ 7% O_2	μg/m³	0.14	0.13	0.13	0.13
Stack Emission Rate	lb/hr	1.89E-06	1.84E-06	1.82E-06	1.85E-06
	g/sec	2.39E-07	2.32E-07	2.29E-07	2.33E-07
LVM Total =	μg/m³		56.0	51.6	**53.8**
SVM Total =	μg/m³	230.1	241.8	242.5	**238.1**

Table 3-4 Summary of HWC MACT Metals – August 11, 2008

Low Volatile Metals Emissions - µg/m³ @ 7% O_2

Metals	Run 1	Run 2		Run 3	Average
As	11.80	6.57		3.70	
Be	0.14	0.13		0.13	
Cr	54.7	49.3		47.8	
Total LVM	66.6	56.0		51.6	**58.1**

LVM Regulatory Standard = 97 µg/m³

Semi-Volatile Metal Emissions - µg/m³ @ 7% O_2

Metals	Run 1	Run 2		Run 3	Average
Pb	229	240		241	
Cd	1.38	1.34		1.21	
Total SVM	230	242		242	**238**

SVM Regulatory Standard = 240 µg/m³

Mercury Emissions -µg/m³ @ 7% O_2

	Run 1	Run 2		Run 3	Average
	58.0	58.2		57.4	**57.9**

Mercury Regulatory Standard = 130 µg/m³

Table 3-5 RM 29 Sampling Parameters and Emission Results – Week of September 8, 2008

Run No. Date Start Time Stop Time	Units	1 08-Sep-08 14:36 16:46	2 09-Sep-08 12:20 14:30	3 10-Sep-08 09:44 11:53	AVGS
Sampling Parameters --					
Barometric Pressure	in. Hg	29.60	29.75	29.72	29.71
Volume Metered	dcf	77.382	79.269	78.905	77.059
Sample Volume	dscf	75.296	78.407	78.654	77.452
Moisture	% v/v	41.4	41.2	41.8	41.5
O_2 at Stack	% dry	11.21	10.91	11.35	11.16
Avg. Stack Temp.	°F	385	381	384	383
Stack Flowrate	dscfm	4,698	5,099	5,248	5,015
Isokinetics	%	107	103	100	104
Total Chromium (Cr) --	LVM				
Quantity Collected	µg	12.16	2.79	9.18	8.04
Stack Conc. @ 7% O_2	µg/m³	8.16	1.74	5.98	5.29
Stack Emission Rate	lb/hr	1.00E-04	2.40E-05	8.10E-05	6.85E-05
	g/sec	1.26E-05	3.02E-06	1.02E-05	8.63E-06
Cadmium (Cd) --	SVM				
Quantity Collected	µg	2.73	2.74	2.20	2.55
Stack Conc. @ 7% O_2	µg/m³	1.83	1.71	1.43	1.66
Stack Emission Rate	lb/hr	2.25E-05	2.35E-05	1.94E-05	2.18E-05
	g/sec	2.83E-06	2.96E-06	2.44E-06	2.75E-06
Lead (Pb) --	SVM				
Quantity Collected	µg	45.6	13.9	39.0	32.84
Stack Conc. @ 7% O_2	µg/m³	30.6	8.7	25.4	21.6
Stack Emission Rate	lb/hr	3.76E-04	1.20E-04	3.45E-04	2.80E-04
	g/sec	4.74E-05	1.51E-05	4.34E-05	3.53E-05
Arsenic (As) --					
Quantity Collected	µg	2.80	2.10	2.10	2.33
Stack Conc. @ 7% O_2	µg/m³	1.88	1.31	1.37	1.52
Stack Emission Rate	lb/hr	2.31E-05	1.81E-05	1.85E-05	1.99E-05
	g/sec	2.91E-06	2.28E-06	2.34E-06	2.51E-06
Beryllium (Be) --					
Quantity Collected	µg	0.20	0.20	0.20	0.20
Stack Conc. @ 7% O_2	µg/m³	0.13	0.12	0.13	0.13
Stack Emission Rate	lb/hr	1.65E-06	1.72E-06	1.77E-06	1.71E-06
	g/sec	2.08E-07	2.17E-07	2.22E-07	2.16E-07
LVM Total =	µg/m³	10.2	3.2	7.5	**6.9**
SVM Total =	µg/m³	32.4	10.4	26.9	**23.2**

Table 3-6 Summary of HWC MACT Metals – September 8, 2008

Low Volatile Metals Emissions - µg/m³ @ 7% O_2					
Metals	**Run 1**	**Run 2**		**Run 3**	**Average**
As	1.88	1.31		1.37	
Be	0.13	0.12		0.13	
Cr	8.2	1.7		6.0	
Total LVM	10.2	3.2		7.5	**6.9**
LVM Regulatory Standard = 92 µg/m³					

Semi-Volatile Metal Emissions - µg/m³ @ 7% O_2					
Metals	**Run 1**	**Run 2**		**Run 3**	**Average**
Pb	30.6	8.7		25.4	
Cd	1.83	1.71		1.43	
Total SVM	32.4	10.4		26.9	**23.2**
SVM Regulatory Standard = 230 µg/m³					

UNIT 3
EMISSION RESULTS

Table 3-1 RM 29 Sampling Parameters and Emission Results

Run No. / Date / Start Time / Stop Time	Units	1	2	3	AVGS
Date		05-Aug-08	06-Aug-08	07-Aug-08	
Start Time		12:56	12:32	12:45	
Stop Time		15:19	14:41	15:04	
Sampling Parameters --					
Barometric Pressure	in. Hg	29.23	29.65	29.65	29.51
Volume Metered	dcf	88.539	87.452	85.943	87.311
Sample Volume	dscf	78.488	84.258	83.932	82.226
Moisture	% v/v	42.3	43.6	40.6	42.2
O_2 at Stack	% dry	11.99	10.96	11.98	11.64
Avg. Stack Temp.	°F	372	377	374	374
Stack Flowrate	dscfm	5,665	5,719	5,890	5,758
Isokinetics	%	92	98	95	95
Mercury (Hg) --					
Quantity Collected	µg	78.5	105	88.2	90.4
Stack Conc. @ 7% O_2	µg/m³	54.9	61.1	57.6	**57.9**
Stack Emission Rate	lb/hr	7.49E-04	9.39E-04	8.19E-04	8.36E-04
	g/sec	9.44E-05	1.18E-04	1.03E-04	1.05E-04
Total Chromium (Cr) --	LVM				
Quantity Collected	µg	37.50	30.49	21.76	29.92
Stack Conc. @ 7% O_2	µg/m³	26.22	17.81	14.21	19.41
Stack Emission Rate	lb/hr	3.58E-04	2.74E-04	2.02E-04	2.78E-04
	g/sec	4.51E-05	3.45E-05	2.55E-05	3.50E-05
Cadmium (Cd) --	SVM				
Quantity Collected	µg	0.24	0.90	0.63	0.59
Stack Conc. @ 7% O_2	µg/m³	0.17	0.53	0.41	0.37
Stack Emission Rate	lb/hr	2.27E-06	8.08E-06	5.85E-06	5.40E-06
	g/sec	2.86E-07	1.02E-06	7.37E-07	6.80E-07
Lead (Pb) --	SVM				
Quantity Collected	µg	83.5	114	70.1	89.18
Stack Conc. @ 7% O_2	µg/m³	58.4	66.6	45.8	56.9
Stack Emission Rate	lb/hr	7.97E-04	1.02E-03	6.50E-04	8.24E-04
	g/sec	1.00E-04	1.29E-04	8.19E-05	1.04E-04
Arsenic (As) --					
Quantity Collected	µg	3.15	3.75	1.94	2.95
Stack Conc. @ 7% O_2	µg/m³	2.20	2.19	1.27	1.89
Stack Emission Rate	lb/hr	3.01E-05	3.37E-05	1.80E-05	2.73E-05
	g/sec	3.79E-06	4.24E-06	2.27E-06	3.43E-06
Beryllium (Be) --					
Quantity Collected	µg	0.20	0.20	0.20	0.20
Stack Conc. @ 7% O_2	µg/m³	0.14	0.12	0.13	0.13
Stack Emission Rate	lb/hr	1.91E-06	1.80E-06	1.86E-06	1.85E-06
	g/sec	2.41E-07	2.26E-07	2.34E-07	2.34E-07
LVM Total =	µg/m³	28.6	20.1	15.6	**21.4**
SVM Total =	µg/m³	58.6	67.1	46.2	**57.3**

Table 3-2 Summary of HWC MACT Metals

Low Volatile Metals Emissions - µg/m³ @ 7% O_2					
Metals	**Run 1**	**Run 2**		**Run 3**	**Average**
As	2.20	2.19		1.27	
Be	0.14	0.12		0.13	
Cr	26.2	17.8		14.2	
Total LVM	28.6	20.1		15.6	**21.4**
LVM Regulatory Standard = 92 µg/m³					

Semi-Volatile Metal Emissions - µg/m³ @ 7% O_2					
Metals	**Run 1**	**Run 2**		**Run 3**	**Average**
Pb	58.4	66.6		45.8	
Cd	0.17	0.53		0.41	
Total SVM	58.6	67.1		46.2	**57.3**
SVM Regulatory Standard = 230 µg/m³					

Mercury Emissions -µg/m³ @ 7% O_2					
	Run 1	**Run 2**		**Run 3**	**Average**
	54.9	61.1		57.6	**57.9**
Mercury Regulatory Standard = 130 µg/m³					

UNIT 4
EMISSION RESULTS

Table 3-2 RM 29 Sampling Parameters and Emission Rates

	Units	1	2	3	AVGS
Run No.		1	2	3	
Date		21-Aug-08	22-Aug-08	23-Aug-08	
Start Time		13:25	10:50	08:55	
Stop Time		15:37	13:01	10:59	
Sampling Parameters --					
Barometric Pressure	in. Hg	29.54	29.69	29.64	29.62
Volume Metered	dcf	90.938	89.784	91.420	90.714
Sample Volume	dscf	89.023	88.433	89.264	88.907
Moisture	% v/v	39.0	39.5	40.3	39.6
O_2 at Stack	% dry	12.27	12.13	11.63	12.01
Avg. Stack Temp.	°F	390	388	394	391
Stack Flowrate	dscfm	17,280	17,255	17,189	17,241
Isokinetics	%	101	100	102	101
Mercury (Hg) --					
Quantity Collected	µg	59.6	38.7	42.3	46.9
Stack Conc. @ 7% O_2	µg/m³	37.9	24.4	25.0	**29.1**
Stack Emission Rate	lb/hr	1.53E-03	9.99E-04	1.08E-03	1.20E-03
	g/sec	1.93E-04	1.26E-04	1.36E-04	1.51E-04
Total Chromium (Cr) --	LVM				
Quantity Collected	µg	3.12	6.28	6.40	5.27
Stack Conc. @ 7% O_2	µg/m³	1.98	3.96	3.78	3.24
Stack Emission Rate	lb/hr	8.01E-05	1.62E-04	1.63E-04	1.35E-04
	g/sec	1.01E-05	2.04E-05	2.05E-05	1.70E-05
Cadmium (Cd) --	SVM				
Quantity Collected	µg	0.80	1.27	1.29	1.12
Stack Conc. @ 7% O_2	µg/m³	0.51	0.80	0.76	0.69
Stack Emission Rate	lb/hr	2.05E-05	3.27E-05	3.29E-05	2.87E-05
	g/sec	2.58E-06	4.12E-06	4.14E-06	3.61E-06
Lead (Pb) --	SVM				
Quantity Collected	µg	34.3	49.1	44.5	42.63
Stack Conc. @ 7% O_2	µg/m³	21.8	30.9	26.3	26.4
Stack Emission Rate	lb/hr	8.81E-04	1.27E-03	1.13E-03	1.09E-03
	g/sec	1.11E-04	1.60E-04	1.43E-04	1.38E-04
Arsenic (As) --					
Quantity Collected	µg	4.82	9.82	16.22	10.29
Stack Conc. @ 7% O_2	µg/m³	3.07	6.19	9.59	6.28
Stack Emission Rate	lb/hr	1.24E-04	2.53E-04	4.13E-04	2.63E-04
	g/sec	1.56E-05	3.19E-05	5.21E-05	3.32E-05
Beryllium (Be) --					
Quantity Collected	µg	0.20	0.20	0.20	0.20
Stack Conc. @ 7% O_2	µg/m³	0.13	0.13	0.12	0.12
Stack Emission Rate	lb/hr	5.13E-06	5.16E-06	5.09E-06	5.13E-06
	g/sec	6.47E-07	6.50E-07	6.42E-07	6.46E-07
LVM Total =	µg/m³	5.2	10.3	13.5	**9.6**
SVM Total =	µg/m³	22.3	31.7	27.1	**27.0**

Table 3-3 Summary of HWC MACT Metals

Low Volatile Metals Emissions - µg/m³ @ 7% O_2					
Metals	Run 1	Run 2		Run 3	Average
As	3.07	6.19		9.59	
Be	0.13	0.13		0.12	
Cr	2.0	4.0		3.8	
Total LVM	5.2	10.3		13.5	**9.6**
LVM Regulatory Standard = 92 µg/m³					

Semi-Volatile Metal Emissions - µg/m³ @ 7% O_2					
Metals	Run 1	Run 2		Run 3	Average
Pb	21.8	30.9		26.3	
Cd	0.51	0.80		0.76	
Total SVM	22.3	31.7		27.1	**27.0**
SVM Regulatory Standard = 230 µg/m³					

Mercury Emissions -µg/m³ @ 7% O_2					
	Run 1	Run 2		Run 3	Average
	37.9	24.4		25.0	**29.1**
Mercury Regulatory Standard = 130 µg/m³					

SYSTEM REMOVAL EFFICIENCY (SRE)
FOR
UNITS 2, 3 AND 4

2008 Metals Testing Removal Efficiencies

Unit 2 (LVM)		**Removal**		**Unit 3 (LVM)**		**Removal**		**Unit 4 (LVM)**		**Removal**
Em. Std.: 92 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 92 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 92 ug/dscm	**Run**	**Efficiency (RE)**
(9/08)		**(%)**				**(%)**				**(%)**
	1	99.99973			**1**	99.99924			**1**	99.99961
	2	99.99991			**2**	99.99940			**2**	99.99923
	3	99.99979			**3**	99.99958			**3**	99.99893
	Avg	99.99981			**Avg**	99.99940			**Avg**	99.99926
Unit 2 (SVM)		**Removal**		**Unit 3 (SVM)**		**Removal**		**Unit 4 (SVM)**		**Removal**
Em. Std.: 230 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 230 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 230 ug/dscm	**Run**	**Efficiency (RE)**
(9/08)		**(%)**				**(%)**				**(%)**
	1	99.99936			**1**	99.99877			**1**	99.99862
	2	99.99978			**2**	99.99844			**2**	99.99800
	3	99.99942			**3**	99.99899			**3**	99.99824
	Avg	99.99952			**Avg**	99.99873			**Avg**	99.99829
Unit 2 (Hg)		**Removal**		**Unit 3 (Hg)**		**Removal**		**Unit 4 (Hg)**		**Removal**
Em. Std.: 130 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 130 ug/dscm	**Run**	**Efficiency (RE)**		Em. Std.: 130 ug/dscm	**Run**	**Efficiency (RE)**
(8/08)		**(%)**				**(%)**				**(%)**
	1	84.79			**1**	83.38			**1**	95.00
	2	81.32			**2**	83.25			**2**	96.72
	3	82.63			**3**	83.96			**3**	96.47
	Avg	82.91			**Avg**	83.53			**Avg**	96.06

2.0 Engineering Description

2.1 Process Overview

Veolia operates 2 Fixed Hearth Dual Chambered Incinerators (Units 2 and 3) and one rotary kiln incinerator (Unit 4) at the Sauget, IL facility. The two fixed hearth units are rated at 16 million Btu/hr each. Incineration Unit No. 3 is a mirror image of Unit No. 2. Both of these units have their own waste handling systems as described in the sections that follow. The only difference being Unit No. 2 is equipped with four (4) baghouse modules, while Unit No. 3 is equipped with three (3) baghouse modules. However, each incinerator is operated identically with only three baghouse modules in service during operation.

2.2 Waste Feed Systems [40 CFR § 63.1207(f)(1)(ii)(c) and (f)(1)(iii)(D) and (E)]

2.2.1 Unit 2 Liquid Waste Feed System and Blending Operations

The fixed hearth incinerator is designed to receive containers, aqueous liquid wastes, organic liquid wastes, specialty liquid feeds, gases and direct inject liquids fed through the aqueous or organic liquid feed systems. These units can receive any combination of wastes -- liquid, semi-solid, solid or gases -- with a heat value of up to 16 million Btu/hr.

Unit 2 is supported by storage/blend tanks located in Tank Farm #1. Rates of feed are controlled at each incinerator. Segregated liquid wastes are stored until utilized in the waste blending facilities. At that time, liquids are delivered to the blending tanks where the daily liquid feed to the incinerator is formulated, tested, and released to the incinerator. Blending of stored liquid wastes to achieve optimum heating value and viscosity for incineration takes place in Tanks 2, 4, 6 & 8. Six additional tanks (10, 20, 30, 40, 50 & 60) are used to segregate different waste stream types for blending of liquid feed to the incinerator. Several criteria are important in designing a blend from available wastes that have been segregated principally by physical and chemical properties. These include compatibility, proper range of heating value, and permit restrictions regarding elemental composition (based on emission limitations). The material is transferred through aboveground pipelines from the tank farm to the incinerator. Pipelines used to transfer liquid organic waste and aqueous waste are equipped with strainers.

In compliance with the Benzene NESHAP, all tanks are vented to individual carbon adsorption canisters for removal of organics before vapor is discharged to the atmosphere. Each carbon adsorber canister is essentially equivalent to a 55 gallon container or greater, if necessary. All tanks are equipped with conservation vents, in addition to the carbon canister adsorber. All tanks are grounded, and flame arrestors are installed between the carbon adsorbers and the tanks.

2.2.1.1 Organic and Aqueous Liquid Waste Feeds

The liquid waste injectors used in the combustion chambers are air-atomizing injectors. These are used for injection of high Btu, low Btu liquids and specialty feed liquids. Dual fluid injection nozzles will be used for atomization of the waste. Each of the injectors is rated at 0-300 gph. The liquid waste feed nozzles are served by parallel redundant pumps and recirculation systems with back pressure control.

2.2.1.2 Packaged and Bulk Solid

Containers of wastes are sampled and analyzed after receipt in accordance with the facility's Waste Analysis Plan. These wastes can then be delivered directly to Unit 2 or repacked into small combustible containers at the facility. Fiberboard or plastic containers (fully or partially full of waste), up to 40-gallon size, may be charged directly to the primary chamber. These will be received at the dock adjoining each fixed hearth incinerator, and charged to the incinerator within 24 hours or returned to permitted storage.

Solids, usually packaged in plastic or fiberboard containers, are introduced into the incinerator through a PLC controlled airlock-ram system located at the lower front of the primary chamber of the incinerator. The airlock is composed of a refractory-lined door, a door into the airlock enclosure, and two pneumatic rams. The action of the feeder is as follows:

- With the incinerator door closed, the airlock door is opened.
- The first pneumatic ram (load ram) pushes weighed charges of waste into the airlock chamber.
- The airlock door is closed.
- A switch is activated either automatically or manually, which opens the door to the incinerator and actuates the ram (charge ram) that pushes the waste into the incinerator. The ram then retracts and the incinerator door closes.

2.2.1.3 Specialty Liquid Feeds and Gases

Specialty Feed Systems associated with Incinerator No. 2 are as follows

- Specialty Feeder
- Compressed Gas Cylinder Feed System
- Direct Inject Liquid Feed System

2.3 Manufacturer, Make and Model of the Incinerator [40 CFR § 63.1207(f)(1)(iii)(A)]

2.3.1 Combustion Chamber and Burners [40 CFR §63.1207(f)(1)(iii)(B) and (C)

Incinerator No. 2 features a two-stage combustion process. Ignition of waste material takes place in the primary (lower) combustion chamber (PCC). A secondary (upper) combustion chamber (SCC) serves as an "after-burner" for process gases. Ignition of the waste takes place at temperatures in excess of 1700 degrees F. The secondary combustion chamber maintains a minimum temperature of approximately 1800 degrees F.

The fixed hearth incinerator is fabricated of carbon steel. The primary chamber has an external diameter of 9 feet and is 17.5 feet long. The interior walls of the chamber are lined with approximately 10 inches of brick refractory and insulation backing, making the internal operating diameter approximately 7'2". The cross-sectional area of the chamber is thus 40.3 square feet. Table 2-2 provides a summary of the incinerator design specifications.

Liquid and solid waste feeds enter the lower chamber on the front-face of the chamber. The primary burner and the specialty feed injector are located near the front-face of the chamber and are mounted tangentially.

The primary burner is a North American burner rated at 12.0 million Btu/hr. and is used in the lower chamber to maintain permitted temperatures. It will burn only natural gas or No. 2 fuel oil. The burner system is supplied with combustion air at a static pressure of 30" water column (WC). The pilot for the primary burner will burn natural gas.

The fuel system for the lower chamber (and secondary combustion chamber) is controlled by a Factory Mutual approved burner management system complete with interlocks and safety valves.

2.3.2 Secondary Combustion Chamber

The secondary combustion chamber (SCC) is a horizontal, cylindrical chamber that has an external diameter of 9 feet and is 17.5 feet long. The interior walls of the chamber are lined with approximately 10 inches of brick refractory and insulation backing, making the internal operating diameter approximately 7'2". The cross-sectional area of the chamber is thus 40.3 square feet.

Following ignition of the waste material under controlled or starved-air conditions in the lower chamber, off-gases travel through a refractory-lined flue gas passage into the upper chamber, which acts as an afterburner. Turbulence is achieved by the tangential introduction of air and additional fuel in the upper chamber.

The SCC is equipped with one burner mounted tangentially on the side of the chamber. The burner is a North American burner rated at 6.0 million Btu/hr and is fueled with natural gas or fuel oil.

As with the primary chamber burner, the SCC burner is supplied with atomizing air and is equipped with a burner management system. This system controls the ignition and initiates an automatic shutoff when there is a loss of flame, combustion air supply, fuel pressure, atomizing air pressure, or pilot burner.

Leaving the upper chamber, the hot gas stream travels through 28 feet of refractory-lined stack sections before reaching the start of the gas scrubbing system. The combined volume of the upper and lower chambers, the flue gas passage and the hot crossover section is approximately 1,567 cubic feet. The total retention time of combustion gases within the system is approximately 5 seconds.

2.3.3 Location of Combustion Zone Temperature Device [40 CFR § 63.1207(f)(1)(xix)]

The thermocouple that monitors temperature in the primary combustion chamber is located on top of the chamber about five feet from the transition. The thermocouple that monitors temperature in the SCC is located on top of the chamber above the transition.

2.3.4 Hazardous Waste Residence Time [40 CFR § 63.1207(f)(1)(ix)]

The Hazardous waste gas residence time for the Fixed Hearth Incinerator is calculated as follows:

- Primary Combustion Chamber Volume – 635 ft3
- Secondary Combustion Chamber Volume – 635 ft3
- Total Volume – 1270 ft3
- Maximum Flue Gas Flowrate – 17,382 acfm (290 ft^3/sec)
- Total Combustion Zone Residence Time = (1270 ft^3)/(290 ft^3/sec) = 4.4 sec

2.3.5 Combustion System Leak

Combustion system leaks are prevented through maintaining a totally sealed combustion chamber, coupled with the use of an induced draft fan that maintains a vacuum of normally - 4 to - 6 inches of water column in both combustion chambers while wastes are being fed to the unit.

2.3.6 Emergency Safety Vent

The incinerator is equipped with an emergency safety vent (ESV) located at the top of the secondary combustion chamber. This ESV is a refractory-lined emergency thermal relief vent (TRV) which is held in the closed position by a pneumatic cylinder. The control valve in the line supplying air to the cylinder and the cylinder vent valve which opens the TRV are located in the control room for each unit. Valve locks (with keys attached) are utilized to deter indiscriminate operation of these valves. Opening of the TRV allows hot combustion gas to vent from the combustion system during emergency shutdown events. The purpose of the TRV is to protect the downstream APCS from excessive temperature situations. A limit switch on the TRV shuts off all waste feeds to the system as it senses that the cap is opening.

2.4 Procedures for Rapidly Stopping Hazardous Waste Feed During Equipment Malfunction [40 CFR §63.1207(f)(1)(viii)]

Equipment malfunctions are identified by the control system, observation of process control variables, or by regular field inspections.

In the event of minor equipment malfunctions (e.g. waste feed or scrubber leaks), the control room operator will be notified. The control room operator will then close the waste feed valves and disable the waste feed pumps.

In the event of major equipment malfunctions (e.g. fire), the emergency stop button located in the control room will be pushed. If this button is pushed, all equipment will switch to its fail-safe position.

2.5 Air Pollution Control Equipment [40 CFR §63.1207(f)(1)(iii)(G)]

2.5.1 Air Pollution Control Systems Descriptions

The air pollution control system consists of a spray dryer absorber and fabric filter baghouse modules. The air pollution control system neutralizes acidic compounds and removes particulate from the exhaust gas. Two subsystems, the spray dryer absorber and the fabric filter, carry out the chemical neutralization and particulate removal functions, respectively. A third subsystem, the lime system, is used to prepare and provide lime slurry to the spray dryer absorber for use in the chemical neutralization process. The induced draft fan and stack provide the mechanical energy required to transport the flue gas through the interconnecting ductwork, to its eventual discharge point to atmosphere.

2.5.1.1 Lime System

The lime system prepares lime slurry for use in the chemical neutralization process in sufficient supply and concentration to maintain continuous flue gas treatment in the spray dryer absorber. The system has been designed for batch mixing to provide this service. Veolia utilizes hydrated lime as its neutralizing agent inf the air pollution control systems. The key neutralization parameter of the hydrated lime is the "CaO Equivalent". Figure 4-1 is the specification sheet for the hydrated lime that Veolia uses. Veolia has used this specific product for over 20 years and plans to continue with its use. Although, if Veolia does change suppliers or type of lime in the future, it would have a "CaO Equivalent" specification equal to or greater than the 72.6% shown on Figure 4-1.

Hydrated lime is stored in a storage bin above the lime preparation area. The storage bin is sized to hold enough hydrated lime to maintain several days of system operation at the maximum combustion rate of the incinerator. Lime is discharged through the conical storage bin bottom. The flow of the material from the bin is aided by a vibrating "live bottom," or bin activator. A variable speed screw feeder is used to meter the hydrated lime in the proportions required for batch mixing lime slurry. The lime is mixed with water in a tank beneath the lime storage bin. The screw feeder speed and the rate that water is added to the lime slurry tank are variable so that the desired lime solids concentration can be achieved in the tank. The variable feed adjustments allow water and lime to be added to the lime slurry tank at a rate that will allow a batch mode of mixing. An agitator is provided in the slurry tank to mix the water and lime and to maintain the suspension of lime solids. The mixed lime slurry is pumped at a continuous rate of flow through a recirculation loop to the atomizer at a rate of up to 10 gpm.

2.5.1.2 Spray Dry Absorber

Unit 2 is equipped with a Spray Dryer Absorber (SDA) located immediately downstream of the secondary combustion chamber. The SDA unit is fabricated of 3/8 inch carbon steel. The function of the SDA is to:

- Further cool the combustion gases from 1600-2000oF to 300-500oF,
- Neutralize and remove HCl and other acids from the combustion gases,
- Remove a portion of the particulate (fly ash) from these gases.

Slurry flow to the spray dryer absorber (SDA) is metered by a flow control valve to obtain the proper feed concentration to the spray dryer absorber atomizer. Automatic (or manual) adjustment to the flow is made as a function of the output from a hydrochloric acid (HCl) analyzer in the gas duct downstream of the fabric filter. The amount of slurry metered is proportional to the amount of HCl monitored.

The slurry passes through a stationary swirl-type liquid distributor into the atomizer wheel where induced centrifugal force from the rapidly spinning wheel discharges the slurry through the wheel nozzles at high velocity. The design of the atomizer wheel, its rate of spin, and the discharge velocity of the slurry, create a cloud of finely divided droplets around the periphery of the atomizer wheel. Cooling water is also passed through the atomizer to provide additional gas cooling to the system. The water flow is not metered, but is controlled by a feedback signal from the atomizer power transmitter. This provides verification that water flow to the atomizer increases or decreases in proportion to the spray dryer absorber outlet temperature.

Flue gas enters from the bottom of the spray dryer absorber through a vertical, centrally located disperser. The disperser directs the flue gas through the zone filled by the atomized slurry cloud where the flue gas and slurry mix and most of the absorption occurs. The gases then flow downward through the absorber chamber and exit through a bottom side duct. As the gases contact and pass through the cloud of atomized lime slurry, the water in the slurry evaporates, cooling the gases. Simultaneously, the lime in the slurry reacts with the hydrogen chloride in the gases to produce calcium salts. Some of the resulting dry material, consisting of calcium salts, fly ash and excess lime, falls to the conical bottom of the unit. The dry material from each unit is discharged to a conveyor system which transports it to a dump trailer or equivalent type system.

2.5.1.3 Fabric Filter

Gas exhausted from the spray dryer absorber is distributed by manifold ducts to four fabric filter modules. The unit is operated with only three modules on-line with the fourth module off-line in a standby mode. Within each filter module, the gas is passed through Teflon-coated fiberglass cloth bags. The gas passes from the outside to the inside of the filter bags. Particulate entrained in the gas stream is mechanically deposited on the outside of the filter bags as the gas passes through the cloth.

Each module has a clean air plenum and housing section to contain approximately 96 bags. Each bag is approximately 6" in diameter by 20' long. The baghouses are fabricated from 3/16" mild steel plate, of welded construction, gas tight and stiffened to withstand the maximum operating negative pressure. Each compartment has a tube sheet that supports the bags and provides for top bag/cage removal. Access to the clean air plenum is via a side access door in the clean air plenum.

The fabric filter cleaning mechanism utilizes jets of air to clean the filter bags. Periodically, the cleaning sequence will be initiated. The sequence is started at the end of a 4 hour timed cycle, when the differential pressure across the filter reaches a predetermined setpoint of approximately 7.0" w.c., or when the operator initiates a cycle. The controller then sequences to each row of filter bags in each module, releasing a burst of air opposite to the direction of gas flow. The quickly released burst of air dislodges dust cake on the exterior of each bag as it travels from the top to the bottom of the bags. Released from the bag, the dust cake falls by gravity into the hopper at the bottom of the module. From there it is discharged to a conveyor system which transports it to a dump trailer, or equivalent type system.

Treated by the spray dryer absorber and filtered by the fabric filters, the cleaned flue gas exits the fabric filter modules to an outlet manifold for exhaust.

2.5.1.4 Induced Draft Fan and Stack

The induced draft fan and stack are located downstream of the fabric filter. Combustion gases are drawn through the system by a 75 hp induced draft (ID) fan, rated at 15,000 acfm at 400° F saturated, and 22" water column pressure. The induced draft fan provides the mechanism for transporting the incinerator flue gas through the spray dryer absorber, fabric filter, and all interconnecting ducts. The ID fan includes an inlet volume control damper to be used to control the velocity of the gas within the ducting and treatment devices.

Treated gases are exhausted from the induced draft fan to the atmosphere through a 90-ft. high stack. The stack diameter for Unit 2 is 39 inches I.D. The stack is equipped with instrument sampling ports and a sampling platform for emissions testing. Figure 5-1 provides details on the design and sample port locations and configurations for the stack.

2.6 Stack Emissions Monitoring [40 CFR §63.1207(f)(1)(iii)(H)]

The continuous emissions monitoring (CEM) system consists of sample probes, sample delivery and conditioning apparatus, and gas analyzers. Samples are extracted from the sampling ports on the stack. A CEM performance test and quality assurance program has been implemented in accordance with the **Appendix to Subpart EEE of Part 63—Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors.**

Responses from each CEMS will be fed to the Control System (CS) where the CO hourly rolling average is calculated and interlocked to the waste feed cutoff valves as part of the Automatic Waste Feed Cutoff System

(AWFCO) discussed in Section 2.8, below. The following provides a brief description of the CEMS instruments including the operating range and measurement principal.

2.6.1 CEM System Description

The Continuous Emissions Monitoring Systems (CEMS) currently being utilized at Incinerator 2 analyzes for opacity, carbon monoxide, hydrogen chloride, total hydrocarbons and oxygen. These monitors, except opacity, are extractive devices mounted in sampling ports on the stack. The table below summarizes the analyzer specifications.

The opacity monitor continuously measures the stack gas opacity and reports the measurements to an indicator and a recorder. An opacity that exceeds a preset limit triggers an alarm and interlock.

Carbon monoxide and hydrogen chloride are monitored with extractive non-disperse infrared analyzers. Total hydrocarbon is monitored with an extractive flame ion detector analyzer. Oxygen is monitored with a zirconium oxide cell.

Stack gas flow rate is continuously monitored using an anubar that sends a 4-20 mA signal to the PLC which converts the signal to acfm.

Table 2-1 Unit 2 Continuous Emission Monitors

Parameter	Current Mfg.	Range	Principle
Oxygen	COSA	0-25%	Electrochemical
Carbon Monoxide	Ecochem MC3	0-200 ppmv 0-3000 ppmv	Infrared
Total hydrocarbons	Thermoelectron	0-100 ppmv	FID/Infrared
Hydrogen chloride	Ecochem MC3	0-1,000 ppmv	Infrared
Opacity	Teledyne	0-100%	White light
Stack gas flow	PSE/Rosemount	0-20,000 acfm	Pressure drop

2.7 Process Monitoring and Control

The facility is equipped with a state-of-the-art monitoring and control system, which facilitates compliance with permit conditions, and otherwise, collects process control information, facilitates efficient operation and detects and prevents damage to the facility. The system consists of three major components:

- A human–machine interface (HMI) system,
- Programmable logic controller's (PLC's), and
- A high speed ethernet cable connects all control system components

The desired control functions are implemented through the HMI system. All digital control and emergency interlocks are accomplished by the PLC.

The control system is capable of monitoring the "operational envelope" of the incinerator and is capable of performing a number of activities including:

- Control room indication of processor sensors located within the incinerator system (such as pressure indication of a field installed pressure transmitter);
- Process controller for single instrument loops or an individual sub-system, such as a temperature control loop involving a sensor reading from one temperature transmitter affecting the function of one temperature control valve; and
- Alarm for an exceedance of a designated setpoint, such as a high pressure or low temperature.

The process control computer will continuously control and monitor the operation of the incinerator. When out-of-range conditions exist, it will notify the operator of those conditions. The process control computer is programmed to shut-down equipment (i.e., bring the system into a safe mode) when designated parameters are exceeded, which is a protective mechanism against potential equipment damage, operation outside of permit limits, or conditions that might lead to a release to the environment.

Continuous monitoring of the incinerator and scrubber system is an important aspect of the system design. A digital readout of all monitoring instrumentation is displayed on the main control screen. An audible and visual alarm alerts the incinerator operator to significant deviations from normal operating conditions. This system allows an immediate response to adverse conditions by the operator. Automatic waste feed cut-off and incineration shutdown mechanisms are also interlocked with the monitoring system at or prior to reaching permit limit levels. Monitoring methods and calibration frequencies are listed in Table 2-3.

The Incinerator has an independent process control computer that interfaces to the Quantum programmable controllers. The process computer is capable of controlling the incinerator in case of a failure in a HMI server. This computer runs a RSVIEW HMI control software that provides operator interface to all instrumentation and controls.

2.8 Automatic Waste Feed Cut-off System [40 CFR §63.1207(f)(1)(iii)(F)]

The incinerator has an Automatic Waste Feed Cut-Off (AWFCO) System that will shut waste feeds off in the event certain operating parameters deviate from allowable set points. The PLC continuously monitors operating parameters, making adjustments to the process as needed for proper control. Alarm logic is incorporated into the PLC system to automatically initiate an AWFCO. Table 2-3 summarizes the current AWFCO set points. AWFCO limits have been established based on several factors that are summarized below.

- <u>Regulatory/permit limits</u> – established to comply with existing permits. An example of this type of limit is the low temperature limit, below which waste cannot be fed until the proper limit is re-established. In addition, the HWC MACT regulations require that the AWFCO system be interlocked with the span of each process instrument that is part of the Continuous Monitoring System (CMS). A listing of these CMS instruments and their interlocked span setpoints is maintained as part of Veolia's Operating Record.
- <u>Process safety limits</u> – established to assure process equipment is protected and unsafe operating conditions do not occur. An example of this is inadequate excess air in the combustion chamber that can lead to fuel rich conditions.
- <u>Utility or Power failure</u> – established to facilitate a controlled shutdown of the process during loss of process air, steam, water or electricity. An example of this is the loss of instrument air that is necessary for certain types of process instruments to function properly. Wastes will not be re-introduced into the incinerators until proper operation of key instruments is re-established.

In addition to the AWFCO system, operators can manually shutdown waste feeds or the entire process should this be needed.

2.8.1 AWFCO System Testing

Veolia tests the AWFCO systems bi-weekly, as weekly testing would unduly interfere with operations by ceasing and restarting waste feeds, potentially increasing emissions, incurring excessive downtime, burning additional natural gas during the downtime, and increasing operating costs. Testing of the AWFCO system is a time-consuming and manpower intensive process. The current testing program has been in place under the RCRA permit for over 20 years and has proven to be adequate in detecting problems. This rationale is included in the facility's AWFCO Plan. In some cases this testing occurs more frequently depending on how often actual AWFCOs occur at the unit. Per the required frequency, incinerator personnel check the functionality of AWFCO logic that is part of the incinerator's PLC system to make sure that should process conditions deviate from allowable limits, the computer logic will initiate waste feed shutdowns as required. This is accomplished by manually simulating process conditions that are outside allowable limits and observing and documenting when the control or block valve software logic on the waste feed line begins to initiate valve closure. Should actual AWFCOs occur during a given testing period, these are documented by operating personnel to satisfy regulatory requirements for system testing. Results of this testing are documented on a separate AWFCO Testing Log and maintained as part of the unit's Operating Record.

2.9 Air Pollution Control Equipment Maintenance Practices [40 CFR §63.1207(f)(1)(iii)(G)]

2.9.1 Program Overview

Once equipment is installed and operational, Veolia utilizes an extensive preventative maintenance (PM) program to keep equipment operational and prevent breakdowns and failures. Based upon the type of equipment and historical operations and maintenance experience, schedules for various inspection and PM activities are followed. This includes aspects such as documenting detailed maintenance histories on equipment, routine inspection and lubrication programs for high wear equipment and non-destructive testing of piping and vessels using techniques like ultrasound to assess integrity. The frequency of these activities varies depending upon the equipment, PM activity and the incinerator's shutdown schedule.

For example, frequent (i.e., weekly) instrument and certain mechanical equipment checks are made for critical process items. Lubrication, vibration analysis and other mechanical integrity checks are done at longer frequencies like monthly or quarterly. And finally, such items as inspecting refractory brick for wear, are typically performed when the entire incinerator is shut down for maintenance.

2.9.2 Test Program Preparation Activities

Prior to testing, instrumentation associated with key parameters of the test will be checked, calibrated, or replaced, as appropriate, to ensure proper operation of the instrumentation during testing (i.e., waste feed flowmeters and scales, CEM's, pressure transmitters, thermocouples, stack flowmeters, etc.).

Table 2-2 Technical Information Summary on Incinerator No. 2

Manufacturer	Trade Waste Incineration	
Model No.	TWI-2000, Series 2	
Type	Fixed Hearth, Dual Chamber	
Date of Manufacture	1987	
Dimensions	Primary Chamber	Secondary Chamber
External Length	17.5'	17.5'
External Diameter	9'	9'
Internal Diameter	7'2"	7'2"
Cross-sectional area	40.3 square feet	40.3 square feet
Burners	Primary Chamber Burner	Secondary Chamber Burner
Manufacturer	North American	North American
Size	12.0 Million Btu/hr	6.0 Million Btu/hr
Fuel	Natural Gas	Natural Gas
Primer Mover	Induced Draft Fan 15,000 acfm @ 400°F saturated, 22 in. water column	

Table 2-3 Current AWFCO Parameters and Limits for Incinerator No. 2

System	Device	Units	Cutoff Limits	Calibration Frequency
Total Pumpable Waste Feed rate	Mass Flowmeters/Scales	Lb/hr	> 3,123 (HRA)	Annually
Total Waste Feedrate	Mass Flowmeters/Scales	Lb/hr	>4,301	Annually/quarterly
High BTU Liquid feedrate	Mass flow meter	lb/hr	≥ 2,012	Annually
Low BTU Liquid feedrate	Mass flow meter	lb/hr	≥ 1,993	Annually
Specialty feeder	Scale	lb/hr	≥ 724	Quarterly
Total LVM Feedrate	Mass Flowmeters/Scales	lb/hr	> 1,264 (12 HRA)	Annually/quarterly
Pumpable LVM Feedrate	Mass flow meter/Scales	lb/hr	> 1,264 (12 HRA)	Annually/quarterly
SVM Feedrate	Mass Flowmeters/Scales	lb/hr	>3,477 (12 HRA)	Annually/quarterly
Mercury Feedrate	Mass Flowmeters/Scales	lb/hr	> 0.0073 (12HRA)	Annually/quarterly
Chlorine Feedrate	Mass Flowmeters/Scales	lb/hr	> 237 (12 HRA)	Annually/quarterly
Ash Feedrate	Mass Flowmeters/Scales	lb/hr	> 673 (12 HRA)	Annually/quarterly
Primary Combustion Chamber Temperature	Type K Thermocouple	°F	≤1,590 (one-minute average) <1,712 (HRA[1]) ≥2,400 (instantaneous)	Annually
Secondary Combustion Chamber Temperature	Type K Thermocouple	°F	≤1,794 (one-minute average) <1,845 (HRA[1]) ≥2,400 (instantaneous)	Annually
Primary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ -0.1 (5 second delay)	Quarterly
Secondary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ -0.1 (5 second delay)	Quarterly
Chlorine Feed to Slurry Flow Ratio	Flowmeter	ratio	> 33.5	Annually
Spray Dryer Adsorber Outlet Temperature	Type K Thermocouple	°F	≥500 (one minute average) >420 (HRA)	Annually
Combustion Gas Flow Rate	Pitot Tube	acfm	≥17,198 >15,534 (HRA)	Annually
Stack Gas Excess Oxygen	Zirconium Oxide fuel cell	%	< 3 (one-minute avg.)	Quarterly
Stack carbon monoxide	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Stack Hydrocarbon	FID	ppmv	≥10 (one minute average)	Quarterly
Stack gas opacity	White Light	%	≥10 (one minute average)	Quarterly
Stack hydrogen chloride[2]	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Fabric filter pressure drop	Delta P transmitter	in. w.c.	≤ 2 or ≥ 10 (1 min. average)	Quarterly

[1] HRA means "hourly rolling average" as calculated by averaging the previous 60 one-minute average values.

[2] This is a RCRA permit limit only.

Figure 2-1 Hydrated Lime Specifications

Mississippi Lime Company
General Offices
Alton, Illinois 62002

P.O. Box [illegible]
Phone: 618-[illegible]

MISSISSIPPI ROTARY PLANT

Hydrated Lime

Code MR200

Meets AWWA and Water Chemicals Codex Specifications

Chemical Analysis

$Ca(OH)_2$	96.0%	to	97.2%
CaO Equivalent	72.8	to	73.6
CaO Total	73.8	to	74.3
$CaCO_3$	0.65	to	1.75
$CaSO_4$	0.05	to	0.10
S Equivalent	0.012	to	0.024
SiO_2	0.38	to	0.85
Al_2O_3	0.20	to	0.30
Fe_2O_3	0.07	to	0.10
MgO	0.40	to	0.55
Free H_2O	0.30	to	0.95
P_2O_5	0.008	to	0.012
MnO	0.0015	to	0.0025

Typical Physical Analysis

Minus 100 mesh	100.0%
Minus 200 mesh	98.5
Minus 325 mesh	92.0

Density - Pounds per ft^3 - 20 to 32 (Depending upon degree of compaction)

2.0 Engineering Description

2.1 Process Overview

Veolia operates 2 Fixed Hearth Dual Chambered Incinerators (Units 2 and 3) and one rotary kiln incinerator (Unit 4) at the Sauget, IL facility. The two fixed hearth units are rated at 16 million Btu/hr each. Incineration Unit No. 3 is a mirror image of Unit No. 2. Both of these units have their own waste handling systems as described in the sections that follow. The only difference being Unit No. 2 is equipped with four (4) baghouse modules, while Unit No. 3 is equipped with three (3) baghouse modules. However, each incinerator is operated identically with only three baghouse modules in service during operation.

2.2 Waste Feed Systems [40 CFR § 63.1207(f)(1)(ii)(c) and (f)(1)(iii)(D) and (E)]

2.2.1 Unit 3 Liquid Waste Feed System and Blending Operations

The fixed hearth incinerator is designed to receive containers, aqueous liquid wastes, organic liquid wastes, specialty liquid feeds and direct inject liquids fed through the aqueous or organic liquid feed systems. These units can receive any combination of wastes -- liquid, semi-solid or solid -- with a heat value of up to 16 million Btu/hr.

Unit 3 is supported by storage/blend tanks located in Tank Farm #1. Rates of feed are controlled at each incinerator. Segregated liquid wastes are stored until utilized in the waste blending facilities. At that time, liquids are delivered to the blending tanks where the daily liquid feed to the incinerator is formulated, tested, and released to the incinerator. Blending of stored liquid wastes to achieve optimum heating value and viscosity for incineration takes place in Tanks 2, 4, 6 & 8. Six additional tanks (10, 20, 30, 40, 50 & 60) are used to segregate different waste stream types for blending of liquid feed to the incinerator. Several criteria are important in designing a blend from available wastes that have been segregated principally by physical and chemical properties. These include compatibility, proper range of heating value, and permit restrictions regarding elemental composition (based on emission limitations). The material is transferred through aboveground pipelines from the tank farm to the incinerator. Pipelines used to transfer liquid organic waste and aqueous waste are equipped with strainers.

In compliance with the Benzene NESHAP, all tanks are vented to individual carbon adsorption canisters for removal of organics before vapor is discharged to the atmosphere. Each carbon adsorber canister is essentially equivalent to a 55 gallon container or greater, if necessary. All tanks are equipped with conservation vents, in addition to the carbon canister adsorber. All tanks are grounded, and flame arrestors are installed between the carbon adsorbers and the tanks.

2.2.1.1 Organic and Aqueous Liquid Waste Feeds

The liquid waste injectors used in the combustion chambers are air-atomizing injectors. These are used for injection of high Btu, low Btu liquids and specialty feed liquids. Dual fluid injection nozzles will be used for atomization of the waste. Each of the injectors is rated at 0-300 gph. The liquid waste feed nozzles are served by parallel redundant pumps and recirculation systems with back pressure control.

2.2.1.2 Packaged and Bulk Solid

Containers of wastes are sampled and analyzed after receipt in accordance with the facility's Waste Analysis Plan. These wastes can then be delivered directly to Unit 3 or repacked into small combustible containers at the facility. Fiberboard or plastic containers (fully or partially full of waste), up to 40-gallon size, may be charged directly to the primary chamber. These will be received at the dock adjoining each fixed hearth incinerator, and charged to the incinerator within 24 hours or returned to permitted storage.

Solids, usually packaged in plastic or fiberboard containers, are introduced into the incinerator through a PLC controlled airlock-ram system located at the lower front of the primary chamber of the incinerator. The airlock is composed of a refractory-lined door, a door into the airlock enclosure, and two pneumatic rams. The action of the feeder is as follows:

- With the incinerator door closed, the airlock door is opened.
- The first pneumatic ram (load ram) pushes weighed charges of waste into the airlock chamber.
- The airlock door is closed.
- A switch is activated either automatically or manually, which opens the door to the incinerator and actuates the ram (charge ram) that pushes the waste into the incinerator. The ram then retracts and the incinerator door closes.

2.2.1.3 Specialty Liquid Feeds and Gases

Specialty Feed Systems associated with Incinerator No. 3 are as follows

- Hooded Specialty Container Feeder
- Glove Box Emission Control Systems
- Direct Inject Liquid Feed System

2.3 Manufacturer, Make and Model of the Incinerator [40 CFR § 63.1207(f)(1)(iii)(A)]

2.3.1 Combustion Chamber and Burners [40 CFR §63.1207(f)(1)(iii)(B) and (C)

Incinerator No. 3 features a two-stage combustion process. Ignition of waste material takes place in the primary (lower) combustion chamber (PCC). A secondary (upper) combustion chamber (SCC) serves as an "after-burner" for process gases. Ignition of the waste takes place at temperatures in excess of 1700 degrees F. The secondary combustion chamber maintains a minimum temperature of approximately 1800 degrees F.

The fixed hearth incinerator is fabricated of carbon steel. The primary chamber has an external diameter of 9 feet and is 17.5 feet long. The interior walls of the chamber are lined with approximately 10 inches of brick refractory and insulation backing, making the internal operating diameter approximately 7'2". The cross-sectional area of the chamber is thus 40.3 square feet. Table 2-2 provides a summary of the incinerator design specifications.

Liquid and solid waste feeds enter the lower chamber on the front-face of the chamber. The primary burner and the specialty feed injector are located near the front-face of the chamber and are mounted tangentially.

The primary burner is a North American burner rated at 12.0 million Btu/hr. and is used in the lower chamber to maintain permitted temperatures. It will burn only natural gas or No. 2 fuel oil. The burner system is supplied with combustion air at a static pressure of 30" water column (WC). The pilot for the primary burner will burn natural gas.

The fuel system for the lower chamber (and secondary combustion chamber) is controlled by a Factory Mutual approved burner management system complete with interlocks and safety valves.

2.3.2 Secondary Combustion Chamber

The secondary combustion chamber (SCC) is a horizontal, cylindrical chamber that has an external diameter of 9 feet and is 17.5 feet long. The interior walls of the chamber are lined with approximately 10 inches of brick refractory and insulation backing, making the internal operating diameter approximately 7'2". The cross-sectional area of the chamber is thus 40.3 square feet.

Following ignition of the waste material under controlled or starved-air conditions in the lower chamber, off-gases travel through a refractory-lined flue gas passage into the upper chamber, which acts as an afterburner. Turbulence is achieved by the tangential introduction of air and additional fuel in the upper chamber.

The SCC is equipped with one burner mounted tangentially on the side of the chamber. The burner is a North American burner rated at 6.0 million Btu/hr and is fueled with natural gas or fuel oil.

As with the primary chamber burner, the SCC burner is supplied with atomizing air and is equipped with a burner management system. This system controls the ignition and initiates an automatic shutoff when there is a loss of flame, combustion air supply, fuel pressure, atomizing air pressure, or pilot burner.

Leaving the upper chamber, the hot gas stream travels through 28 feet of refractory-lined stack sections before reaching the start of the gas scrubbing system. The combined volume of the upper and lower chambers, the flue gas passage and the hot crossover section is approximately 1,567 cubic feet. The total retention time of combustion gases within the system is approximately 5 seconds.

2.3.3 Location of Combustion Zone Temperature Device [40 CFR §63.1207(f)(1)(xix)]

The thermocouple that monitors temperature in the primary combustion chamber is located on top of the chamber about five feet from the transition. The thermocouple that monitors temperature in the SCC is located on top of the chamber above the transition.

2.3.4 Hazardous Waste Residence Time [40 CFR §63.1207(f)(1)(ix)]

The Hazardous waste gas residence time for the Fixed Hearth Incinerator is calculated as follows:

- Primary Combustion Chamber Volume – 635 ft3
- Secondary Combustion Chamber Volume – 635 ft3
- Total Volume – 1270 ft3
- Maximum Flue Gas Flowrate – 17,382 acfm (290 ft^3/sec)
- Total Combustion Zone Residence Time = (1270 ft^3)/(290 ft^3/sec) = 4.4 sec

2.3.5 Combustion System Leak

Combustion system leaks are prevented through maintaining a totally sealed combustion chamber, coupled with the use of an induced draft fan that maintains a vacuum of normally - 4 to - 6 inches of water column in both combustion chambers while wastes are being fed to the unit.

2.3.6 Emergency Safety Vent

The incinerator is equipped with an emergency safety vent (ESV) located at the top of the secondary combustion chamber. This ESV is a refractory-lined emergency thermal relief vent (TRV) which is held in the closed position by a pneumatic cylinder. The control valve in the line supplying air to the cylinder and the cylinder vent valve which opens the TRV are located in the control room for each unit. Valve locks (with keys attached) are utilized to deter indiscriminate operation of these valves. Opening of the TRV allows hot combustion gas to vent from the combustion system during emergency shutdown events. The purpose of the TRV is to protect the downstream APCS from excessive temperature situations. A limit switch on the TRV shuts off all waste feeds to the system as it senses that the cap is opening.

2.4 Procedures for Rapidly Stopping Hazardous Waste Feed During Equipment Malfunction [40 CFR §63.1207(f)(1)(viii)]

Equipment malfunctions are identified by the control system, observation of process control variables, or by regular field inspections.

In the event of minor equipment malfunctions (e.g. waste feed or scrubber leaks), the control room operator will be notified by radio. The control room operator will then disable the waste feed pumps and close the waste feed valves.

In the event of major equipment malfunctions (e.g. fire), the emergency stop button located in the control room will be pushed. If this button is pushed, all equipment will switch to its fail-safe position.

2.5 Air Pollution Control Equipment [40 CFR §63.1207(f)(1)(iii)(G)]

2.5.1 Air Pollution Control Systems Descriptions

The air pollution control system consists of a spray dryer absorber and fabric filter baghouse. The air pollution control system neutralizes acidic compounds and removes particulate from the exhaust gas. Two subsystems, the spray dryer absorber and the fabric filter, carry out the chemical neutralization and particulate removal functions, respectively. A third subsystem, the lime system, is used to prepare and provide lime slurry to the spray dryer absorber for use in the chemical neutralization process. The induced draft fan and stack provide the mechanical energy required to transport the flue gas through the interconnecting ductwork, to its eventual discharge point to atmosphere.

2.5.1.1 Lime System

The lime system prepares lime slurry for use in the chemical neutralization process in sufficient supply and concentration to maintain continuous flue gas treatment in the spray dryer absorber. The system has been designed for batch mixing to provide this service. Veolia utilizes hydrated lime as its neutralizing agent inf the air pollution control systems. The key neutralization parameter of the hydrated lime is the "CaO Equivalent". Figure 4-1 is the specification sheet for the hydrated lime that Veolia uses. Veolia has used this specific product for over 20 years and plans to continue with its use. Although, if Veolia does change suppliers or type of lime in the future, it would have a "CaO Equivalent" specification equal to or greater than the 72.6% shown on Figure 4-1.

Hydrated lime is stored in a storage bin above the lime preparation area. The storage bin is sized to hold enough hydrated lime to maintain several days of system operation at the maximum combustion rate of the incinerator. Lime is discharged through the conical storage bin bottom. The flow of the material from the bin is aided by a vibrating "live bottom," or bin activator. A variable speed screw feeder is used to meter the hydrated lime in the proportions required for batch mixing lime slurry. The lime is mixed with water in a tank beneath the lime storage bin. The screw feeder speed and the rate that water is added to the lime slurry tank are variable so that the desired lime solids concentration can be achieved in the tank. The variable feed adjustments allow water and lime to be added to the lime slurry tank at a rate that will allow a batch mode of mixing. An agitator is provided in the slurry tank to mix the water and lime and to maintain the suspension of lime solids. The mixed lime slurry is pumped at a continuous rate of flow through a recirculation loop to the atomizer at a rate of up to 10 gpm.

2.5.1.2 Spray Dry Absorber

Unit 3 is equipped with a Spray Dryer Absorber (SDA) located immediately downstream of the secondary combustion chamber. The SDA unit is fabricated of 3/8 inch carbon steel. The function of the SDA is to:

- Further cool the combustion gases from 1600-2000oF to 300-500oF,
- Neutralize and remove HCl and other acids from the combustion gases,
- Remove a portion of the particulate (fly ash) from these gases.

Slurry flow to the spray dryer absorber (SDA) is metered by a flow control valve to obtain the proper feed concentration to the spray dryer absorber atomizer. Automatic (or manual) adjustment to the flow is made as a function of the output from a hydrochloric acid (HCl) analyzer in the gas duct downstream of the fabric filter. The amount of slurry metered is proportional to the amount of HCl monitored.

The slurry passes through a stationary swirl-type liquid distributor into the atomizer wheel where induced centrifugal force from the rapidly spinning wheel discharges the slurry through the wheel nozzles at high velocity. The design of the atomizer wheel, its rate of spin, and the discharge velocity of the slurry, create a cloud of finely divided droplets around the periphery of the atomizer wheel. Cooling water is also passed through the atomizer to provide additional gas cooling to the system. The water flow is not metered, but is controlled by a feedback signal from the atomizer power transmitter. This provides verification that water flow to the atomizer increases or decreases in proportion to the spray dryer absorber outlet temperature.

Flue gas enters from the bottom of the spray dryer absorber through a vertical, centrally located disperser. The disperser directs the flue gas through the zone filled by the atomized slurry cloud where the flue gas and slurry mix and most of the absorption occurs. The gases then flow downward through the absorber chamber and exit through a bottom side duct. As the gases contact and pass through the cloud of atomized lime slurry, the water in the slurry evaporates, cooling the gases. Simultaneously, the lime in the slurry reacts with the hydrogen chloride in the gases to produce calcium salts. Some of the resulting dry material, consisting of calcium salts, fly ash and excess lime, falls to the conical bottom of the unit. The dry material from each unit is discharged to a conveyor system which transports it to a dump trailer or equivalent type system.

2.5.1.3 Fabric Filter

Gas exhausted from the spray dryer absorber is distributed by manifold ducts to three fabric filter modules. Within each filter module, the gas is passed through Teflon-coated fiberglass cloth bags. The gas passes from the outside to the inside of the filter bags. Particulate, entrained in the gas stream, is mechanically deposited on the outside of the filter bags as the gas passes through the cloth.

Each module has a clean air plenum and housing section to contain approximately 96 bags. Each bag is approximately 6" in diameter by 20' long. The baghouses are fabricated from 3/16" mild steel plate, of welded construction, gas tight and stiffened to withstand the maximum operating negative pressure. Each compartment has a tube sheet that supports the bags and provides for top bag/cage removal. Access to the clean air plenum is via a side access door in the clean air plenum.

The fabric filter cleaning mechanism utilizes jets of air to clean the filter bags. Periodically, the cleaning sequence will be initiated. The sequence is either started at the end of a timed cycle, or when the differential pressure across the filter reaches a predetermined setpoint of approximately 7.0" w.c., or when the operator initiates a cycle. The controller then sequences to each row of filter bags in each module, releasing a burst of air opposite to the direction of gas flow. The quickly released burst of air dislodges dust cake on the exterior of each bag as it travels from the top to the bottom of the bags. Released from the bag, the dust cake falls by gravity into the hopper at the bottom of the module. From there it is discharged to a conveyor system which transports it to a dump trailer, or equivalent type system.

Treated by the spray dryer absorber and filtered by the fabric filter, the cleaned flue gas exits the Fabric filter modules to an outlet manifold for exhaust.

2.5.1.4 Induced Draft Fan and Stack

The induced draft fan and stack are located downstream of the fabric filter. Combustion gases are drawn through the system by a 75 hp induced draft (ID) fan, rated at 15,000 acfm at 400° F saturated, and 22" water column pressure. The induced draft fan provides the mechanism for transporting the incinerator flue gas through the spray dryer absorber, Fabric filter, and all interconnecting ducts. The ID fan includes an inlet volume control damper to be used to control the velocity of the gas within the ducting and treatment devices. Treated gasses exhausted from the induced draft fan to the atmosphere through a 90-ft. high stack. The stack diameter is 39 inches I.D. The stack is equipped with instrument sampling ports and a sampling platform for emissions testing. Figure 5-1 provides details on the design and sample port locations and configurations.

2.6 Stack Emissions Monitoring [40 CFR §63.1207(f)(1)(iii)(H)]

The continuous emissions monitoring (CEM) system consists of sample probes, sample delivery and conditioning apparatus, and gas analyzers. Samples are extracted from the transition ducting located between the scrubber and stack. A CEM performance test and quality assurance program has been implemented in accordance with the **Appendix to Subpart EEE of Part 63—Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors.**

Responses from each CEMS will be fed to the Control System (CS) where the CO hourly rolling average is calculated and interlocked to the waste feed cutoff valves as part of the Automatic Waste Feed Cutoff System (AWFCO) discussed in Section 2.8, below. The following provides a brief description of the CEMS instruments including the operating range and measurement principal.

2.6.1 CEM System Description

The Continuous Emissions Monitoring Systems (CEMS) currently being utilized at Incinerator 3 analyzes for opacity, carbon monoxide, hydrogen chloride, total hydrocarbons and oxygen. These monitors, except opacity, are extractive devices mounted in sampling ports on the stack. The table below summarizes the analyzer specifications.

The opacity monitor continuously measures the stack gas opacity and reports the measurements to an indicator and a recorder. An opacity that exceeds a preset limit triggers an alarm and interlock.

Carbon monoxide and hydrogen chloride are monitored with extractive non-disperse infrared analyzers. Total hydrocarbon is monitored with an extractive flame ion detector analyzer. Oxygen is monitored with a zirconium oxide cell.

Stack gas flow rate is continuously monitored using an anubar that sends a 4-20 mA signal to the PLC which converts the signal to acfm.

Table 2-1 Unit 3 Continuous Emission Monitors

Parameter	Current Mfg.	Range	Principle
Oxygen	COSA	0-25%	Electrochemical
Carbon Monoxide	Ecochem MC3	0-200 ppmv 0-3000 ppmv	Infrared
Total hydrocarbons	Thermoelectron	0-100 ppmv	FID/Infrared
Hydrogen chloride	Ecochem MC3	0-1,000 ppmv	Infrared
Opacity	Teledyne	0-100%	White light
Stack gas flow	PSE/Rosemount	0-20,000 acfm	Pressure drop

2.7 Process Monitoring and Control

The facility is equipped with a state-of-the-art monitoring and control system, which facilitates compliance with permit conditions, and otherwise, collects process control information, facilitates efficient operation and detects and prevents damage to the facility. The system consists of three major components:

- A human–machine interface (HMI) system,
- Programmable logic controller's (PLC's), and

2.7.1.1 A high speed ethernet cable connects all control system components

The desired control functions are implemented through the HMI system. All digital control and emergency interlocks are accomplished by the PLC.

The control system is capable of monitoring the "operational envelope" of the incinerator and is capable of performing a number of activities including:

- Control room indication of processor sensors located within the incinerator system (such as pressure indication of a field installed pressure transmitter);
- Process controller for single instrument loops or an individual sub-system, such as a pressure control loop involving a sensor reading from one pressure transmitter affecting the function of one pressure control valve; and
- Alarm for an exceedance of a designated setpoint, such as a high pressure or low temperature.

The process control computer will continuously control and monitor the operation of the incinerator. When out-of-range conditions exist, it will notify the operator of those conditions. The process control computer is programmed to shut-down equipment (i.e., bring the system into a safe mode) when designated parameters are exceeded, which is a protective mechanism against potential equipment damage, operation outside of permit limits, or conditions that might lead to a release to the environment.

Continuous monitoring of the incinerator and scrubber system is an important aspect of the system design. A digital readout of all monitoring instrumentation is displayed on the main control screen. An audible and visual alarm alerts the incinerator operator to significant deviations from normal operating conditions. This system allows an immediate response to adverse conditions by the operator. Automatic waste feed cut-off and incineration shutdown mechanisms are also interlocked with the monitoring system at or prior to reaching permit limit levels. Monitoring methods and calibration frequencies are listed in Table 2-3.

The Incinerator has an independent process control computer that interfaces to the Quantum Progammable controllers. The process computer is capable of controlling the incinerator in case of a failure in a computer. This computer runs a RSVIEW HMI control software that provides operator interface to all instrumentation and controls.

2.8 Automatic Waste Feed Cut-off System [40 CFR §63.1207(f)(1)(iii)(F)]

The incinerator has an Automatic Waste Feed Cut-Off (AWFCO) System that will shut waste feeds off in the event certain operating parameters deviate from allowable set points. The PLC continuously monitors operating parameters, making adjustments to the process as needed for proper control. Alarm logic is incorporated into the PLC system to automatically initiate an AWFCO. Table 2-3 summarizes the current AWFCO set points. AWFCO limits have been established based on several factors that are summarized below.

- Regulatory/permit limits – established to comply with existing permits. An example of this type of limit is the low temperature limit, below which waste can not be fed until the proper limit is re-established. In addition, the HWC MACT regulations require that the AWFCO system be interlocked with the span of each process instrument that is part of the Continuous Monitoring System (CMS). A listing of these CMS instruments and their interlocked span setpoints is maintained as part of Veolia's Operating Record.
- Process safety limits – established to assure process equipment is protected and unsafe operating conditions do not occur. An example of this is inadequate excess air in the combustion chamber that can lead to fuel rich conditions.
- Utility or Power failure – established to facilitate a controlled shutdown of the process during loss of process air, steam, water or electricity. An example of this is the loss of instrument air that is necessary for certain types process instruments to function properly. Wastes will not be re-introduced into the incinerators until proper operation of key instruments is re-established.

In addition to the AWFCO system, operators can manually shutdown waste feeds or the entire process should this be needed.

2.8.1 AWFCO System Testing

Veolia tests the AWFCO systems bi-weekly, as weekly testing would unduly interfere with operations by ceasing and restarting waste feeds, potentially increasing emissions, incurring excessive downtime, burning additional natural gas during the downtime, and increasing operating costs. Testing of the AWFCO system is a time-consuming and manpower intensive process. The current testing program has been in place under the RCRA permit for over 20 years and has proven to be adequate in detecting problems. This rationale is included in the facility's AWFCO Plan. In some cases this testing occurs more frequently depending on how often actual AWFCOs occur at the unit. Per the required frequency, incinerator personnel check the functionality of AWFCO logic that is part of the incinerator's PLC system to make sure that should process conditions deviate from allowable limits, the computer logic will initiate waste feed shutdowns as required. This is accomplished by manually simulating process conditions that are outside allowable limits and observing and documenting when the control or block valve software logic on the waste feed line begins to initiate valve closure. Should actual AWFCOs occur during a given testing period, these are documented by operating personnel to satisfy regulatory requirements for system testing. Results of this testing are documented on a separate AWFCO Testing Log and maintained as part of the unit's Operating Record.

2.9 Air Pollution Control Equipment Maintenance Practices [40 CFR §63.1207(f)(1)(iii)(G)]

2.9.1 Program Overview

Once equipment is installed and operational, Veolia utilizes an extensive preventative maintenance (PM) program to keep equipment operational and prevent breakdowns and failures. Based upon the type of equipment and historical operations and maintenance experience, schedules for various inspection and PM activities are followed. This includes aspects such as documenting detailed maintenance histories on equipment, routine inspection and lubrication programs for high wear equipment and non-destructive testing of piping and vessels using techniques like ultrasound to assess integrity. The frequency of these activities varies depending upon the equipment, PM activity and the incinerator's shutdown schedule.

For example, frequent (i.e., weekly) instrument and certain mechanical equipment checks are made for critical process items. Lubrication, vibration analysis and other mechanical integrity checks are done at longer frequencies like monthly or quarterly. And finally, such items as inspecting refractory brick for wear, are typically performed when the entire incinerator is shut down for maintenance.

2.9.2 Test Program Preparation Activities

Prior to testing, instrumentation associated with key parameters of the test will be checked, calibrated, or replaced, as appropriate, to ensure proper operation of the instrumentation during testing (i.e., waste feed flowmeters and scales, CEM's, pressure transmitters, thermocouples, stack flowmeters, etc.).

Table 2-2 Technical Information Summary on Incinerator No. 3

Manufacturer	Trade Waste Incineration	
Model No.	TWI-2000, Series 2	
Type	Fixed Hearth, Dual Chamber	
Date of Manufacture	1988	
Dimensions	Primary Chamber	Secondary Chamber
External Length	17.5'	17.5'
External Diameter	9'	9'
Internal Diameter	7'2"	7'2"
Cross-sectional area	40.3 square feet	40.3 square feet
Burners	Primary Chamber Burner	Secondary Chamber Burner
Manufacturer	North American	North American
Size	12.0 Million Btu/hr	6.0 Million Btu/hr
Fuel	Natural Gas	Natural Gas
Primer Mover	Induced Draft Fan 15,000 acfm @ 400°F saturated, 22 in. water column	

Table 2-3 Current AWFCO Parameters and Limits for Incinerator No. 3

System	Device	Units	Cutoff Limits	Calibration Frequency
Total Pumpable Waste Feed rate	Mass Flowmeters/Scales	Lb/hr	> 3,123 (HRA)	Annually
Total Waste Feedrate	Mass Flowmeters/Scales	Lb/hr	>4,301	Annually/quarterly
High BTU Liquid feedrate	Mass flow meter	lb/hr	≥ 2,012	Annually
Low BTU Liquid feedrate	Mass flow meter	lb/hr	≥ 1,993	Annually
Specialty feeder	Scale	lb/hr	≥ 724	Quarterly
Total LVM Feedrate	Mass Flowmeters/Scales	lb/hr	> 1,264 (12 HRA)	Annually/quarterly
Pumpable LVM Feedrate	Mass Flowmeters/Scales	lb/hr	> 1,264 (12 HRA)	Annually/quarterly
SVM Feedrate	Mass Flowmeters/Scales	lb/hr	>3,477 (12 HRA)	Annually/quarterly
Mercury Feedrate	Mass Flowmeters/Scales	lb/hr	> 0.0073 (12HRA)	Annually/quarterly
Chlorine Feedrate	Mass Flowmeters/Scales	lb/hr	> 237 (12 HRA)	Annually/quarterly
Ash Feedrate	Mass Flowmeters/Scales	lb/hr	> 673 (12 HRA)	Annually/quarterly
Primary Combustion Chamber Temperature	Type K Thermocouple	°F	≤1,590 (one-minute average) <1,712 (HRA[1]) ≥2,400 (instantaneous)	Annually
Secondary Combustion Chamber Temperature	Type K Thermocouple	°F	≤1,794 (one-minute average) <1,845 (HRA[1]) ≥2,400 (instantaneous)	Annually
Primary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ -0.1 (5 second delay)	Quarterly
Secondary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ -0.1 (5 second delay)	Quarterly
Chlorine Feed to Slurry Flow Ratio	Flowmeter	ratio	> 33.5	Annually
Spray Dryer Adsorber Outlet Temperature	Type K Thermocouple	°F	≥500 (one minute average) >420 (HRA)	Annually
Combustion Gas Flow Rate	Pitot Tube	acfm	≥17,198 >15,534 (HRA)	Annually
Stack Gas Excess Oxygen	Zirconium Oxide fuel cell	%	< 3 (one-minute avg.)	Quarterly
Stack carbon monoxide	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Stack Hydrocarbon	FID	ppmv	≥10 (one minute average)	Quarterly
Stack gas opacity	White Light	%	≥10 (one minute average)	Quarterly
Stack hydrogen chloride[2]	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Fabric filter pressure drop	Delta P transmitter	in. w.c.	≤ 2 or ≥ 10 (1 min. average)	Quarterly

[1] HRA means "hourly rolling average" as calculated by averaging the previous 60 one-minute average values.
[2] This is a RCRA permit limit only.

Figure 2-1 Hydrated Lime Specifications

Mississippi Lime Company
General Offices
Alton, Illinois 62002

MISSISSIPPI ROTARY PLANT

Hydrated Lime

Code MR200

Meets AWWA and Water Chemicals Codex Specifications

Chemical Analysis

$Ca(OH)_2$	96.0%	to	97.2%
CaO Equivalent	72.8	to	73.6
CaO Total	73.8	to	74.3
$CaCO_3$	0.65	to	1.75
$CaSO_4$	0.05	to	0.10
S Equivalent	0.012	to	0.024
SiO_2	0.38	to	0.65
Al_2O_3	0.20	to	0.30
Fe_2O_3	0.07	to	0.10
MgO	0.40	to	0.55
Free H_2O	0.30	to	0.95
P_2O_5	0.008	to	0.012
MnO	0.0015	to	0.0025

Typical Physical Analysis

Minus 100 mesh	100.0%
Minus 200 mesh	98.5
Minus 325 mesh	92.0

Density – Pounds per ft^3 – 20 to 32 (Depending upon degree of compaction)

2.0 Engineering Description

2.1 Process Overview

Veolia operates 2 Fixed Hearth Dual Chambered Incinerators (Units 2 and 3) and one rotary kiln incinerator (Unit 4) at the Sauget, IL facility. The two fixed hearth units are rated at 16 million Btu/hr each. Incineration Unit No. 3 is a mirror image of Unit No. 2. Both of these units have their own waste handling systems as described in the sections that follow. The only difference being Unit No. 2 is equipped with four (4) baghouse modules, while Unit No. 3 is equipped with three (3) baghouse modules. However, each incinerator is operated identically with only three baghouse modules in service during operation. Unit 4 is rated at 50 million Btu/hr and is equipped with its own tank farm system, drum storage, bulk solids storage and feed systems.

2.2 Waste Feed Systems [40 CFR § 63.1207(f)(1)(ii)(c) and (f)(1)(iii)(D) and (E)]

2.2.1 Unit 4 Liquid Waste Feed System and Blending Operations

The Unit 4 Rotary Kiln can incinerate any of the waste that Veolia is authorized and permitted to receive. All physical forms of wastes will be handled and fed by the system's waste feed devices. Liquids will be fed to either the kiln or the Secondary Combustion Chamber (SCC). Bulk solid wastes will be fed to the kiln through either the ram feeder. Containerized wastes will be fed to the kiln through the ram feeder or the auxiliary ram feeder. This unit can receive any combination of wastes -- liquid, semi-solid, or solid -- with a heat value of up to 50 million Btu/hr.

Unit 4 is supported by storage tanks located in Tank Farm #3. These tanks are used to store the liquid organic waste, aqueous wastes, and pumpable sludges to be fed to the system. Unlike Tank Farm #1, all of the tanks in Tank Farm #3 can be used as feed tanks to the incinerator. Several criteria are important in designing a blend from received wastes. These include compatibility, proper range of heating value, and permit restrictions regarding elemental composition (based on emission limitations). Pumps to transfer these wastes to the system are installed in the tank farm. The material is transferred through aboveground pipelines from the tank farm to the incinerator. Pipelines used to transfer liquid organic waste and aqueous waste are equipped with strainers.

In compliance with the Benzene NESHAP, all tanks are vented to individual carbon adsorption canisters for removal of organics before vapor is discharged to the atmosphere. Each carbon adsorber canister is essentially equivalent to a 55 gallon container or greater, if necessary. All tanks are equipped with conservation vents, in addition to the carbon canister adsorber. All tanks are grounded, and flame arrestors are installed between the carbon adsorbers and the tanks.

2.2.1.1 Organic and Aqueous Liquid Waste Feeds

The liquid waste injectors used in the combustion chambers are air-atomizing injectors. These are used for injection of pumpable sludges, aqueous wastes and organic liquid wastes to the kiln and for injection of organic liquid waste to the SCC. Dual fluid injection nozzles will be used for atomization of the waste. Each of the injectors is rated at 0-300 gph. The liquid waste feed nozzles are served by parallel redundant pumps and recirculation systems with back pressure control.

2.2.1.2 Packaged and Bulk Solid

Containers of wastes are sampled and analyzed after receipt in accordance with the facility's Waste Analysis Plan. These wastes can then be delivered directly to Unit 4 or repacked into small combustible containers at the facility. Repackaged containers are delivered to, and staged, in the Container Storage Unit No. 6 adjacent to the Unit 4 incinerator. When scheduled for feeding to the system, the containers of waste are transferred by forklifts to the feed conveyors serving Unit 4.

Bulk solids and non-pumpable wastes are delivered and discharged into waste feed bins in the Bulk Solids Storage Building after being received, sampled, and analyzed. A clamshell operating from an overhead crane is used to transfer these wastes from the bins to the feed hoppers discharging to the system's ram feeder. The weigh hopper is equipped with weigh cells so each charge of waste can be weighed before it is discharged into the ram feeder. Fugitive emissions are controlled by a baghouse, cyclone, and carbon adsorption system connected to this system.

The ram feeder is a 25-inch wide by 42 inch high (inside dimensions) rectangular tube operated by a hydraulically driven ram. The ram tube is equipped with a vertical, hydraulically operated charge door near the kiln end. This door is opened before the ram begins advancing to push a charge into the kiln. After the ram has fully retracted, a limit switch triggers the door to close so as to protect the ram feeder from the kiln's radiant heat. The ram is capable of operating from 0-30 cycles/hour.

The top face of the ram feeder has a 2' x 2' opening which receives waste charges from the hopper. The ram feeder isolation gate, the charge door, and the ram operate in sequence. At the beginning of a cycle, the ram is fully retracted. On a "start" command from the operator or the programmable controller, the ram feeder isolation gate opens to receive a charge of waste from the hopper. The gate then closes, the charge door opens, and the ram begins its advance. Once the ram reaches its full extension, it begins to retract. When the ram is fully retracted, the charge door is closed and the cycle can be repeated. This system's sequenced operation combined with the negative pressure in the kiln prevent fugitive emissions from escaping the kiln ram feeder system.

The ram feeder also receives containers of wastes delivered by an auxiliary feed system. The auxiliary feed conveyor is capable of handling charge weights of 1 to 100 pounds. The system is capable of handling charge sizes up to 24 inches in diameter and 24 inches tall. The auxiliary feed conveyor is capable of making 60 charges an hour or one complete cycle every minute.

2.2.1.3 Specialty Liquid Feeds

The Specialty Feed System associated with Incinerator No. 4 is a Direct Inject Liquid Feed System.

2.3 Manufacturer, Make and Model of the Incinerator [40 CFR § 63.1207(f)(1)(iii)(A)]

2.3.1 Combustion Chamber and Burners [40 CFR §63.1207(f)(1)(iii)(B) and (C)

Incinerator No. 4 features a two-stage combustion process. Ignition of waste material takes place in the kiln, or primary combustion chamber (PCC). A secondary combustion chamber (SCC) serves as an "after-burner" for process gases and is also permitted to incinerate high Btu liquid waste. Ignition of the waste takes place at temperatures in excess of 1600 degrees F. The secondary combustion chamber maintains a minimum temperature of approximately 1875 degrees F.

The rotary kiln is fabricated of carbon steel. It has approximate dimensions of 8'8" O.D. X 35' long. It is supported on a one-degree slope by two steel tires or riding rings. Each riding ring rides on two pairs of steel trunnions and have an approximate outside diameter of 9 feet 5 inches. The thickness and face width of the trunnions are approximately 6 inches and 9 inches, respectively. **Table 2-2** provides a summary of the incinerator design specifications.

The kiln is lined with approximately 7 ½ inches of dense abrasion-resistant high-alumina firebrick refractory. With this refractory system, the kiln has an inside diameter of approximately 7 feet and a length of approximately 35 feet, an integral cross-section area of approximately 38 square feet and an internal volume of approximately 1,346 cubic feet.

All kiln feeds will enter through the upper kiln face plate which is located on the feed end of the kiln. The plate contains a primary burner, three liquid feed nozzles (for pumpable sludge, aqueous waste, and high Btu liquid waste), a ram feeder and a surge vent.

The primary burner is equivalent to a North American 'Fuel Directed' burner of 25 MMBtu/hr. and burns No. 2 fuel oil or natural gas. The burner system is supplied with approximately 4,000 acfm combustion air at a static pressure of 20" water column (WC). The pilot for the primary burner will burn natural gas.

The fuel system for the kiln (and secondary combustion chamber) is controlled by a Factory Mutual approved burner management system complete with interlocks and safety valves.

2.3.2 Secondary Combustion Chamber (SCC)

The SCC is a vertical, cylindrical chamber having approximate dimensions of 10'-6" O.D. x 71' high. It is fabricated of carbon steel and lined with an inner course (hot face) of approximately six inches of high alumina refractory and an outer course of approximately two inches of insulating refractory. With this installed refractory, the SCC has an inside diameter of approximately nine feet. The effective length (gas retention length) of the chamber is approximately 48' - 6". Consequently, the SCC has a cross-section area of 64 square feet and an effective volume of approximately 3,084 cubic feet. At maximum combustion gas flows, the combustion gas residence time is greater than two seconds.

Combustion gases from the kiln enter the bottom of the SCC through a refractory-lined side duct and exit from the top of the SCC through a refractory-lined duct to the tempering chamber. The floor of the chamber is sloped to facilitate the removal of ash and solids through a slag tap.

The SCC is equipped with one burner mounted on the sidewall of the chamber near the bottom. The burner is a Trane Thermal Model, or equivalent, with a design heat release of approximately 30 million Btu/hr. This burner is supplied with No. 2 fuel oil or natural gas and combustion air.

As with the kiln burner, the SCC burner is supplied with atomizing air and is equipped with a burner management system. This system controls the ignition and initiates an automatic shutoff when there is a loss of flame, combustion air supply, fuel pressure, atomizing air pressure, pilot burner or ID fan.

The SCC burner is a high-intensity, vortex type unit with a spin vane assembly, located within the windbox to impart an intense rotary motion to the combustion air. This rotary motion and the burner design provide complete mixing of air and fuel, and recirculation of the gases within the combustion chamber promotes rapid combustion and high heat intensity.

2.3.3 Location of Combustion Zone Temperature Device [40 CFR §63.1207(f)(1)(xix)]

The pyrometer that monitors temperature in the rotary kiln is located top-center in the transition section between the rotary kiln and the SCC about two feet downstream from the exit of the kiln. The thermocouple that monitors temperature in the SCC is located on the west side of the chamber near the SCC exit duct.

2.3.4 Hazardous Waste Residence Time [40 CFR §63.1207(f)(1)(ix)]

The hazardous waste gas residence time for the Unit 4 Rotary Kiln Incinerator is calculated as follows:

- Rotary Kiln Volume – 1346 ft3
- Secondary Combustion Chamber Volume – 3084 ft3
- Total Volume – 4430 ft3
- Maximum Flue Gas Flowrate – 43,000 acfm (717 ft^3/sec)
- Total Combustion Zone Residence Time = (4430 ft^3)/(717 ft^3/sec) = 6.2 sec

2.3.5 Combustion System Leak

The kiln itself is equipped with a double seal system that is comprised of overlapping, adjustable, stainless steel spring plates on both the feed and discharge ends of the kiln. The sealing edges of each plate are fitted with a sintered-metal wear shoe similar to a brake shoe with the inner seal resting on the kiln shell. The powdered metal formulation for the seal shoes include graphite granules, which make the shoes self-lubricating. The void between the seals and the outer shell of the kiln is pressurized to further prevent fugitive emissions. In addition to the kiln seal system, Unit 4 also utilizes an induced draft fan that maintains a vacuum of – 0.5 to – 1.0 inches water column while waste is being fired into the system.

2.3.6 Emergency Safety Vent

Unit 4 is equipped with two emergency vents, one located at the kiln inlet which acts as an emergency pressure relief, the second is located at the top of the SCC as a thermal relief vent.

The emergency vent at the kiln inlet would only be required for an occurrence that overwhelms the ability of the ID fan to control the pressure of the kiln. The vent and chute opening is designed such that waste from the bulk solids chute would not impede the escaping gas flow. A deflector separates the feed flow from the vent opening. The entrainment of solids through the surge vent is minimal. As an extra precaution, the exhaust opening of the vent is angled to provide a horizontal exit, thereby minimizing solids entrainment into the air. The vent is kept closed by weighted louvers. These louvers will open only if the pressure in the kiln suddenly rises beyond the compensating capacity of the ID fan. A limit switch on the louvers will automatically shutoff all waste feeds to the kiln and SCC when the vent is opened.

The incinerator is also equipped with an emergency safety vent (ESV) located at the top of the secondary combustion chamber. This ESV is a refractory-lined emergency thermal relief vent (TRV) which is held in the closed position by a pneumatic cylinder. The control valve in the line supplying air to the cylinder and the cylinder vent valve which opens the TRV are located in the control room for each unit. Valve locks (with keys attached) are utilized to deter indiscriminate operation of these valves. Opening of the TRV allows hot combustion gas to vent from the combustion system during emergency shutdown events. The purpose of the TRV is to protect the downstream APCS from excessive temperature situations. A limit switch on the TRV shuts off all waste feeds to the system as it senses that the cap is opening.

2.4 Procedures for Rapidly Stopping Hazardous Waste Feed During Equipment Malfunction [40 CFR §63.1207(f)(1)(viii)]

Equipment malfunctions are identified by the control system, observation of process control variables, or by regular field inspections.

In the event of a minor equipment malfunction (e.g. waste feed or scrubber leaks), the control room operator will be notified. The control room operator will then close the waste feed valves and disable the waste feed pumps.

In the event of major equipment malfunction (e.g. fire), the emergency stop button located in the control room will be pushed. If this button is pushed all equipment will switch to its fail-safe position.

2.5 Air Pollution Control Equipment [40 CFR §63.1207(f)(1)(iii)(G)]

2.5.1 Air Pollution Control Systems Descriptions

The air pollution control system consists of a tempering chamber, two spray dryer absorbers, and fabric filter baghouse modules. The air pollution control system neutralizes acidic compounds and removes particulate from the exhaust gas. Two subsystems, the spray dryer absorber and the fabric filter, carry out the chemical neutralization and particulate removal functions, respectively. A third subsystem, the lime system, is used to prepare and provide lime slurry to the spray dryer absorber for use in the chemical neutralization process. The induced draft fan and stack provide the mechanical energy required to transport the flue gas through the interconnecting ductwork, to its eventual discharge point to atmosphere.

2.5.1.1 Tempering Chamber

The tempering chamber is a vertical, cylindrical unit designed to cool the combustion gases using a series of internal dual-fluid (water and air) spray nozzles. The combustion gases enter the top of the chamber, flow downward through the spray pattern and exit from the bottom of the chamber. The spray pattern is designed to eliminate direct contact of water with refractory, and the chamber is designed to maintain a dry bottom under all operating conditions. That is, the injection rate of spray water is controlled so that it is completely vaporized and carried out of the chamber in the combustion gases. The tempering chamber is approximately 49' high with 11' I.D. and is fabricated of ¼ inch nominal plate thickness carbon steel (ASTM A36) and lined with refractory. The spray nozzles and extensions are fabricated of 304 SS material.

The tempering chamber is sized so that a combustion gas retention time of greater than one second will be maintained at all gas flows. Because some molten particulate materials in the combustion gases are cooled in this process unit to below their fusion point, some solids are generated and collected in the chamber. Therefore, the chamber has a cone bottom and a slide gate to facilitate the removal of solids. These solids are discharged onto a conveyor system, which transports them to a hopper.

2.5.1.2 Lime System

The lime system prepares lime slurry for use in the chemical neutralization process in sufficient supply and concentration to maintain continuous flue gas treatment in the spray dryer absorber. The system has been designed for batch mixing to provide this service. Veolia utilizes hydrated lime as its neutralizing agent inf the air pollution control systems. The key neutralization parameter of the hydrated lime is the "CaO Equivalent". Figure 4-1 is the specification sheet for the hydrated lime that Veolia uses. Veolia has used this specific product for over 20 years and plans to continue with its use. Although, if Veolia does change suppliers or type of lime in the future, it would have a "CaO Equivalent" specification equal to or greater than the 72.6% shown on Figure 4-1.

Hydrated lime is stored in a storage bin above the lime preparation area. The storage bin is sized to hold enough hydrated lime to maintain several days of system operation at the maximum combustion rate of the incinerator. Lime is discharged through the conical storage bin bottom. The flow of the material from the bin is aided by a vibrating "live bottom," or bin activator. A variable speed screw feeder is used to meter the hydrated lime in the proportions required for batch mixing lime slurry. The lime is mixed with water in a tank beneath the lime storage bin. The screw feeder speed and the rate that water is added to the lime slurry tank are variable so that the desired lime solids concentration can be achieved in the tank. The variable feed adjustments allow water and lime to be added to the lime slurry tank at a rate that will allow a batch mode of mixing. An agitator is provided in the slurry tank to mix the water and lime and to maintain the suspension of lime solids. The mixed lime slurry is pumped at a continuous rate of flow through a recirculation loop to the SDA nozzles at a rate of up to 10 gpm to each nozzle.

2.5.1.3 Spray Dry Absorber

Unit 4 is equipped with two Spray Dryer Absorbers (SDA) located immediately downstream of the Tempering Chamber. Each SDA unit is fabricated of 3/8 inch carbon steel. The function of the SDAs is to:

- Further cool the combustion gases from 600-800°F to 300-500°F,
- Neutralize and remove HCl and other acids from the combustion gases,
- Remove a portion of the particulate (fly ash) from these gases.

Slurry flow to each spray dryer absorber (SDA) is metered by a flow control valve to obtain the proper feed concentration to the spray dryer absorber. Manual adjustment to the flow is made as a function of the SDA outlet temperature and as a function of the output from a hydrochloric acid (HCl) analyzer in the gas duct downstream of the fabric filter. Since the Tempering Chamber accomplishes initial cooling of the gases, no additional water is used in the SDAs for gas temperature control.

The combined units are sized to remove more than 820 lb/hr. of chlorine from the combustion gases. Each SDA is approximately 72' high by 10'7" in diameter. Each unit includes a head section, and a 60° conical hopper. Each SDA chamber has one access door in the upper section. Each hopper has one access door, a flanged clean-out port, and a drain connection. The SDA head section consists of a flanged inlet connection and a hot gas inlet plenum. The dual-fluid atomizing nozzles include stainless steel housings and stellited inserts. The nozzles are assembled to permit field removal from the piping. The two lime slurry piping headers have automatic isolation valves.

Combustion gases enter the top of each of these units, flow downward through a central duct and are dispersed symmetrically from this duct into the absorber chamber at a velocity and direction that assures optimal contact with the cloud of atomized lime slurry droplets introduced into the chamber by dual-fluid (lime slurry and air) nozzles. The gases then flow downward through each absorber chamber and exit through a bottom side duct. As the gases contact and pass through the cloud of atomized lime slurry, the water in the slurry evaporates, cooling the gases. Simultaneously, the lime in the slurry reacts with the hydrogen chloride in the gases to produce calcium salts. Some of the resulting dry material, consisting of calcium salts, fly ash and excess lime, falls to the conical bottom of each unit. The dry material from each unit is discharged to a conveyor system which transports it to a dump trailer or equivalent type system.

2.5.1.4 Fabric Filter

Gas exhausted from the spray dryer absorbers is distributed to two fabric filter modules connected in parallel. Each module is divided into three compartments connected in parallel, which contain multiple fabric filter bags through which the combustion gases pass to remove particulates. Within each compartment, the gas is passed through Teflon-coated fiberglass cloth bags. The gas passes from the outside to the inside of the filter bags. Particulate entrained in the gas stream is mechanically deposited on the outside of the filter bags as the gas passes through the cloth.

Each compartment has a clean air plenum and housing section to contain approximately 308 bags. Each bag is approximately 5" in diameter by 5' long. The baghouses are fabricated from 3/16" mild steel plate, of welded construction, gas tight and stiffened to withstand the maximum operating negative pressure. Each compartment has a tube sheet that supports the bags and provides for top bag/cage removal. Access to the clean air plenum is via a bolted access door. Each trailer mounted unit contains the compressed air headers, gas inlet and outlet manifolds, and the conveyor.

The fabric filter cleaning mechanism utilizes jets of air to clean the filter bags. Periodically, the cleaning sequence will be initiated. The sequence is started when the differential pressure across the filter reaches a predetermined setpoint of approximately 8.0" w.c. or when the operator initiates a cycle. The controller then sequences to each row of filter bags in each module, releasing a burst of air opposite to the direction of gas flow. The quickly released burst of air dislodges dust cake on the exterior of each bag as it travels from the top to the bottom of the bags. Released from the bag, the dust cake falls by gravity into the hopper at the bottom of the module. From there it is discharged to a conveyor system which transports it to a dump trailer, or equivalent type system.

Treated by the spray dryer absorbers and filtered by the fabric filters, the cleaned flue gas exits the fabric filter compartments to an outlet manifold for exhaust.

2.5.1.5 Carbon Injection

The carbon injection system will air inject activated carbon into the plenum immediately upstream of the baghouses and allow for a more efficient means of controlling Dioxin/Furan and mercury emissions. This system will be controlled by an existing PLC which will control the input of activated carbon to the baghouse inlet plenum. 2 to 20 pounds per hour of powdered activated carbon will be air injected into this plenum and allow for direct contact with the stack gases exiting the SDA's.

The amount of carbon is dosed in a dust-free manner into a low pressure air stream via pneumatic eduction. The eductor uses a blower for the motive air. High and low air pressure switches ensure that the blower is operating correctly and that the carbon delivery system is clear from obstruction. The minimum high pressure setting is 4 psig and the maximum low pressure setting is 1 inch water column. The carbon/air stream will then travel through piping to the injection nozzle into the ductwork. The carbon will contact the gas stream exiting the SDA's and allow for the adsorption of any dioxin/furans and mercury that might be present in this stream. Adsorption will continue as the stack gases proceed through the baghouses. The clean stack gas will exit the final stack via the induced draft fan and the captured solids will be discharged from the baghouses via the screw conveying system into an enclosed dump trailer for disposal at a Subtitle C landfill.

2.5.1.6 Induced Draft Fan and Stack

The induced draft fan and stack are located downstream of the fabric filter. Combustion gases are drawn through the system by a 400 hp induced draft (ID) fan, rated at 53,000 acfm at 400° F saturated, and 25" water column pressure. The induced draft fan provides the mechanism for transporting the incinerator flue gas through the spray dryer absorber, fabric filter, and all interconnecting ducts. The ID fan includes an inlet volume control damper to be used to control the velocity of the gas within the ducting and treatment devices.

Treated gases are exhausted from the induced draft fan to the atmosphere through a 100-ft. high stack. The stack diameter for Unit 4 is 48 inches I.D. The stack is equipped with instrument sampling ports and a sampling platform for emissions testing. Figure 5-1 provides details on the design and sample port locations and configurations for the stack.

2.6 Stack Emissions Monitoring [40 CFR §63.1207(f)(1)(iii)(H)]

The continuous emissions monitoring (CEM) system consists of sample probes, sample delivery and conditioning apparatus, and gas analyzers. Samples are extracted from the transition ducting located between the ID fan and the stack. A CEM performance test and quality assurance program has been implemented in accordance with the **Appendix to Subpart EEE of Part 63—Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors.**

Responses from each CEMS will be fed to the Control System (CS) where the CO hourly rolling average is calculated and interlocked to the waste feed cutoff valves as part of the Automatic Waste Feed Cutoff System (AWFCO) discussed in Section 2.8, below. The following provides a brief description of the CEMS instruments including the operating range and measurement principal.

2.6.1 CEM System Description

The Continuous Emissions Monitoring Systems (CEMS) currently being utilized at Incinerator 4 analyzes for opacity, carbon monoxide, hydrogen chloride, total hydrocarbons and oxygen. These monitors, except opacity, are extractive devices mounted in the ductwork between the ID fan and the stack. The table below summarizes the analyzer specifications.

The opacity monitor continuously measures the stack gas opacity and reports the measurements to an indicator and a recorder. An opacity that exceeds a preset limit triggers an alarm and interlock.

Carbon monoxide and hydrogen chloride are monitored with extractive non-disperse infrared analyzers. Total hydrocarbon is monitored with an extractive flame ion detector analyzer. Oxygen is monitored with a zirconium oxide cell.

Stack gas flow rate is continuously monitored using an anubar that sends a 4-20 mA signal to the PLC which converts the signal to acfm.

Table 2-1 Veolia ES Technical Solutions - Continuous Emissions Monitors

Parameter	Current Mfg.	Range	Principle
Oxygen	COSA	0-25%	Electrochemical
Carbon Monoxide	Echochem MC 3	0-200 ppmv 0-3000 ppmv	Infrared
Total hydrocarbons	Thermoelectron	0-100 ppmv	FID/Infrared
Hydrogen chloride	Echochem MC 3	0-1000 ppmv	Infrared
Opacity	Teledyne	0-100%	White light
Stack gas flow	PSE/Rosemount	0-55,000 acfm	Pressure drop

2.7 Process Monitoring and Control

The facility is equipped with a state-of-the-art monitoring and control system, which facilitates compliance with permit conditions, and otherwise, collects process control information, facilitates efficient operation and detects and prevents damage to the facility. The system consists of three major components:

- A human–machine interface (HMI) system,
- Programmable logic controller's (PLC's), and
- A high speed ethernet cable connects all control system components

The desired control functions are implemented through the HMI system. All digital control and emergency interlocks are accomplished by the PLC.

The control system is capable of monitoring the "operational envelope" of the incinerator and is capable of performing a number of activities including:

- Control room indication of processor sensors located within the incinerator system (such as pressure indication of a field installed pressure transmitter);
- Process controller for single instrument loops or an individual sub-system, such as a temperature control loop involving a sensor reading from one temperature transmitter affecting the function of one temperature control valve; and
- Alarm for an exceedance of a designated setpoint, such as a high pressure or low temperature.

The process control computer will continuously control and monitor the operation of the incinerator. When out-of-range conditions exist, it will notify the operator of those conditions. The process control computer is programmed to shut-down equipment (i.e., bring the system into a safe mode) when designated parameters are exceeded, which is a protective mechanism against potential equipment damage, operation outside of permit limits, or conditions that might lead to a release to the environment.

Continuous monitoring of the incinerator and scrubber system is an important aspect of the system design. A digital readout of all monitoring instrumentation is displayed on the main control screen. An audible and visual alarm alerts the incinerator operator to significant deviations from normal operating conditions. This system allows an immediate response to adverse conditions by the operator. Automatic waste feed cut-off and incineration shutdown mechanisms are also interlocked with the monitoring system at or prior to reaching permit limit levels. Monitoring methods and calibration frequencies are listed in **Table 2-3**.

The Incinerator has an independent process control computer that interfaces to the Allen-Bradley programmable controllers. The process computer is capable of controlling the incinerator in case of a failure in a HMI server. This computer runs a RSVIEW HMI control software that provides operator interface to all instrumentation and controls.

2.8 Automatic Waste Feed Cut-off System [40 CFR §63.1207(f)(1)(iii)(F)]

The incinerator has an Automatic Waste Feed Cut-Off (AWFCO) System that will shut waste feeds off in the event certain operating parameters deviate from allowable set points. The PLC continuously monitors operating parameters, making adjustments to the process as needed for proper control. Alarm logic is incorporated into the PLC system to automatically initiate an AWFCO. **Table 2-3** summarizes the current

AWFCO set points. AWFCO limits have been established based on several factors that are summarized below.

- Regulatory/permit limits – established to comply with existing permits. An example of this type of limit is the low temperature limit, below which waste cannot be fed until the proper limit is re-established. In addition, the HWC MACT regulations require that the AWFCO system be interlocked with the span of each process instrument that is part of the Continuous Monitoring System (CMS). A listing of these CMS instruments and their interlocked span setpoints is maintained as part of Veolia's Operating Record.
- Process safety limits – established to assure process equipment is protected and unsafe operating conditions do not occur. An example of this is inadequate excess air in the combustion chamber that can lead to fuel rich conditions.
- Utility or Power failure – established to facilitate a controlled shutdown of the process during loss of process air, steam, water or electricity. An example of this is the loss of instrument air that is necessary for certain types of process instruments to function properly. Wastes will not be re-introduced into the incinerators until proper operation of key instruments is re-established.

In addition to the AWFCO system, operators can manually shutdown waste feeds or the entire process should this be needed.

2.8.1 AWFCO System Testing

Veolia tests the AWFCO systems bi-weekly, as weekly testing would unduly interfere with operations by ceasing and restarting waste feeds, potentially increasing emissions, incurring excessive downtime, burning additional natural gas during the downtime, and increasing operating costs. Testing of the AWFCO system is a time-consuming and manpower intensive process. The current testing program has been in place under the RCRA permit for over 20 years and has proven to be adequate in detecting problems. This rationale is included in the facility's AWFCO Plan. In some cases this testing occurs more frequently depending on how often actual AWFCOs occur at the unit. Per the required frequency, incinerator personnel check the functionality of AWFCO logic that is part of the incinerator's PLC system to make sure that should process conditions deviate from allowable limits, the computer logic will initiate waste feed shutdowns as required. This is accomplished by manually simulating process conditions that are outside allowable limits and observing and documenting when the control or block valve software logic on the waste feed line begins to initiate valve closure. Should actual AWFCOs occur during a given testing period, these are documented by operating personnel to satisfy regulatory requirements for system testing. Results of this testing are documented on a separate AWFCO Testing Log and maintained as part of the unit's Operating Record.

2.9 Air Pollution Control Equipment Maintenance Practices [40 CFR §63.1207(f)(1)(iii)(G)]

2.9.1 Program Overview

Once equipment is installed and operational, Veolia utilizes an extensive preventative maintenance (PM) program to keep equipment operational and prevent breakdowns and failures. Based upon the type of equipment and historical operations and maintenance experience, schedules for various inspection and PM activities are followed. This includes aspects such as documenting detailed maintenance histories on equipment, routine inspection and lubrication programs for high wear equipment and non-destructive testing of piping and vessels using techniques like ultrasound to assess integrity. The frequency of these activities varies depending upon the equipment, PM activity and the incinerator's shutdown schedule.

For example, frequent (i.e., weekly) instrument and certain mechanical equipment checks are made for critical process items. Lubrication, vibration analysis and other mechanical integrity checks are done at longer frequencies like monthly or quarterly. And finally, such items as inspecting refractory brick for wear, are typically performed when the entire incinerator is shut down for maintenance.

2.9.2 Test Program Preparation Activities

Prior to testing, instrumentation associated with key parameters of the test will be checked, calibrated, or replaced, as appropriate, to ensure proper operation of the instrumentation during testing (i.e., waste feed flowmeters and scales, CEM's, pressure transmitters, thermocouples and pyrometers, stack flowmeters, etc.).

Table 2-2 Technical Information Summary on Incinerator No. 4

Manufacturer	Trade Waste Incineration	
Model No.	TWI-2000, Series 2	
Type	Rotary Kiln	
Date of Manufacture	1989	
Dimensions	Primary Chamber	Secondary Chamber
External Length	35'	48'6"
External Diameter	8'8"	10'6"
Internal Diameter	7'	9'
Cross-sectional area	38 square feet	64 square feet
Burners	Primary Chamber Burner	Secondary Chamber Burner
Manufacturer	North American	Trane Thermal
Size	12.0 Million Btu/hr	30 Million Btu/hr
Fuel	Natural Gas	Natural Gas
Primer Mover	Induced Draft Fan 4,000 acfm @ 400°F saturated, 20 in. water column	

Table 2-3 Current AWFCO Parameters and Limits for Incinerator No. 4

System	Device	Units	Cutoff Limits	Calibration Frequency
Primary Combustion Chamber Temperature	Pyrometer	°F	≤1,240 (one-minute average) <1,507 (HRA[1]) ≥2,400 (instantaneous)	Annually
Secondary Combustion Chamber Temperature	Type K Thermocouple	°F	≤1,825 (one-minute average) <1,886 (HRA[1]) ≥2,400 (instantaneous)	Annually
Primary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ atmospheric (instantaneous)	Quarterly
Secondary Combustion Chamber pressure	Pressure transmitter	in. w.c.	≥ atmospheric (instantaneous)	Quarterly
Spray Dryer Adsorber Inlet Temperature	Type K Thermocouple	°F	≥ 1,200 (one minute average)	Annually
Spray Dryer Adsorber Outlet Temperature	Type K Thermocouple	°F	≥ 500 (one minute average) >435 (HRA)	Annually
Total Pumpable Waste Feedrate	Mass flow meter/scales	lb/hr	>4262 (HRA)	Annually
Total Waste Feedrate	Mass flow meter/scales	lb/hr	>14,802 (HRA)	Annually/ Quarterly
LVM Feedrate	Mass flow meter/scales	lb/hr	>120 (12 HRA)	Annually/ Quarterly
SVM Feedrate	Mass flow meter/scales	lb/hr	>117 (12 HRA)	Annually/ Quarterly
Mercury Feedrate	Mass flow meter/scales	lb/hr	>0.067 (12 HRA)	Annually/ Quarterly
Chlorine Feedrate	Mass flow meter/scales	lb/hr	>274 (12 HRA)	Annually/ Quarterly
Ash Feedrate	Mass flow meter/scales	lb/hr	>8,777 (12 HRA)	Annually/ Quarterly
Carbon Feedrate	Mass flow meter	lb/hr	>6 (HRA)	Quarterly
Carbon Injection System Maximum Low Pressure	Pressure Switch	in. w.c.	>1	Quarterly
Carbon Injection System Minimum High Pressure	Pressure Switch	psig	<4	Quarterly
Chlorine Feed to Slurry Flow Ratio	Flow Meter	Ratio	>44.4	Annually
Combustion Gas Flow Rate	Anubar	acfm	≥ 43,900 (HRA)	Annually
Stack Gas Excess Oxygen	Zirconium Oxide fuel cell	%	≤ 3 (one minute average)	Quarterly
Stack carbon monoxide	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Stack Hydrocarbon	FID	ppmv	≥10 (one minute average)	Quarterly
Stack gas opacity	White Light	%	≥10 (one minute average)	Quarterly

System	Device	Units	Cutoff Limits	Calibration Frequency
Stack hydrogen chloride[2]	Infrared	ppmv	≥100 (HRA) ≥500 (one minute average)	Quarterly
Liquid feedrate	Mass flow meter	lb/hr	≥ 1,700	Annually
Sludge feedrate	Mass flow meter	lb/hr	≥ 1,100	Annually
Drummed and Bulk Solids Feedrate	Scale	lb/hr	≥ 15,000	Quarterly
Fabric filter pressure drop	Delta P transmitter	in. w.c.	≤ 2 or ≥ 10 (one minute average)	Quarterly

[1] HRA means "hourly rolling average" as calculated by averaging the previous 60 one-minute average values.

[2] This is a RCRA permit limit only.

Figure 2-1 Hydrated Lime Specifications

Mississippi Lime Company
General Offices
Alton, Illinois 62002

MISSISSIPPI ROTARY PLANT

Hydrated Lime

Code MR200

Meets AWWA and Water Chemicals Codex Specifications

Chemical Analysis

$Ca(OH)_2$	96.0%	to	97.2%
CaO Equivalent	72.8	to	73.6
CaO Total	73.6	to	74.3
$CaCO_3$	0.65	to	1.75
$CaSO_4$	0.05	to	0.10
S Equivalent	0.012	to	0.024
SiO_2	0.38	to	0.65
Al_2O_3	0.20	to	0.30
Fe_2O_3	0.07	to	0.10
MgO	0.40	to	0.55
Free H_2O	0.30	to	0.95
P_2O_5	0.008	to	0.012
MnO	0.0015	to	0.0025

Typical Physical Analysis

Minus 100 mesh	100.0%
Minus 200 mesh	98.5
Minus 325 mesh	92.0

Density – Pounds per ft^3 – 20 to 32 (Depending upon degree of compaction)

CONTINUOUS MONITORING SYSTEM QUALITY CONTROL PROGRAM

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Prepared by:

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October 2008

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1.0 INTRODUCTION AND BACKGROUND

Veolia ES Technical Solutions, LLC (Veolia) owns and operates two fixed hearth incinerators (Units 2 and 3) and a rotary kiln incinerator (Unit 4) at its facility located in Sauget, Illinois. The incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWC), Part 63, Subpart EEE (§ 63.1200 to § 63.1221). The NESHAP specifies emissions standards which reflect emissions performance of Maximum Achievable Control Technologies (MACT), and is commonly referred to as the HWC MACT.

Hazardous waste combustors are required [per § 63.8(d)(2)] to establish and implement a Continuous Monitoring System (CMS) Quality Control (QC) Program. The purpose of the QC Program is to outline procedures used to verify that the CMS are properly installed, calibrated, and collecting accurate data on an ongoing basis. The CMS performance evaluation test plan was submitted as part of the Comprehensive Performance Test Plan.

The QC Program demonstrates Veolia's compliance with the requirements set forth in § 63.8(d)(2), as well as the additional quality assurance (QA) requirements. The QC Program is required to contain descriptions of initial and subsequent CMS calibration, calibration drift, preventive maintenance, data recording, calculations and reporting; and a corrective action plan for malfunctioning CMS. Table 1-1 presents the regulatory references related to the QC program, followed by the section of this plan that addresses each specific requirement. Some references are made to other HWC MACT required facility operating plans.

This QC Program is intended to fulfill the requirements of § 63.8(d)(2), and includes information related to the procedures for each of the following operations:

- Initial and subsequent calibration of the CMS
- Determination and adjustment of the calibration drift of the CMS
- Preventive maintenance of the CMS, including spare parts inventory
- Data recording, calculations, and reporting
- Program of corrective action for malfunctioning CMS.

Table 1-1
Regulatory Checklist for the CMS QA Program

Regulatory Citation	Description	Plan Section
§ 63.8(c)(1)(i)	Operation and maintenance of each CMS	Section 1.2, 2.3 O&M Plan CEMS Plan
§ 63.8(c)(1)(iii)	Startup, shutdown, and malfunction plan for CMS	SSMP Plan
§ 63.8(c)(3)	Verification of operational status	CMS PET Plan
§ 63.8(c)(7)(ii)	Out-of-control CMS data will not be used in averages and calculations.	Section 4.0
§ 63.8(c)(7)(ii)	Corrective actions for an out-of-control CMS	Section 4.0 and SSMP Plan
§ 63.8(c)(8)	Out-of-control CMS information to be submitted	Section 4.0
§ 63.8(d)(2)	Develop and implement QC portion of CMS QA program	Section 1.0
§ 63.8(d)(2)	QA program includes the development and submittal of the performance evaluation test plan	Section 2.1.1
§ 63.8(d)(2)(i)	Develop written procedures for initial and subsequent calibrations	Sections 2.1.1, 2.1.2
§ 63.8(d)(2)(ii)	Develop written procedures for determination and adjustment of calibration drifts	Section 2.2
§ 63.8(d)(2)(iii)	Develop written procedures for preventive maintenance and spare parts inventory	Section 2.3
§ 63.8(d)(2)(iv)	Data recording, calculations, and reporting	Sections 3.1, 3.2
§ 63.8(d)(2)(vi)	Corrective actions for malfunctioning CMS	Section 4.0
§ 63.8(e)(3)	Performance evaluation of CMS	CMS PET Plan
§ 63.8(g)	Reduction of monitoring data	Section 3.2
§ 63.10(b)(1)	Maintaining files	Section 3.1
§ 63.10(b)(2)(ix)	Maintain records of measurements from performance evaluations	Section 3.1
§ 63.10(b)(2)(vi)	Maintain records of each period during which a CMS is malfunctioning, or inoperative and out of control	Section 4.0 and SSMP Plan
§ 63.10(b)(2)(vii)	Maintain records of measurements to demonstrate compliance	Section 3.1
§ 63.10(b)(2)(viii)	Maintain records of results of CMS performance evaluations and opacity and visible emission observations	Section 3.1
§ 63.10(b)(2)(x)	Maintain records of CMS calibration checks	Section 2.1.2

Table 1-1 (continued)
Regulatory Checklist for the CMS QA Program

Regulatory Citation	Description	Plan Section
§ 63.10(b)(2)(xi)	Maintain records of all adjustments and maintenance performed on the CMS	Section 3.1
§ 63.10(c)(1)	Recordkeeping requirements for CMS measurements (including unavoidable breakdowns and out-of-control situations)	Section 3.1
§ 63.10(c)(13)	Maintain records of total process operating time during the reporting period	Section 3.1
§ 63.10(c)(14)	Develop and implement CMS QA program procedures	Section 1.0
§ 63.10(c)(5)	Maintain records of date and time for CMS inoperability (except for zero and high-level checks)	Section 3.1
§ 63.10(c)(6)	Maintain records of date and time for CMS out-of-control periods	Section 3.1
§ 63.10(c)(8)	Maintain records of identification of each time period of exceedances - does not include periods of Startup, Shutdown, Malfunction (SSM)	Section 3.1
§ 63.10(e)(3)(i)	Submittal of semiannual excess emissions and CMS performance report	Section 3.1
§ 63.10(e)(3)(v)	Content and submittal data of excess emissions and CMS performance report	Section 3.2
§ 63.10(e)(3)(vi)	Content of summary report required by (e)(3)(vii) and (e)(3)(viii) to this section	Section 3.2
§ 63.10(e)(3)(vii)	Condition for submitting only the summary report	Section 3.2
§ 63.10(e)(3)(viii)	Condition for submitting both the summary report and excess emissions and CMS performance report	Section 3.2
§ 63.1209(b)(2)(i)	Calibration of thermocouples and pyrometers	Section 2.1
§ 63.1209(b)(3)	Frequency of CMS sampling, evaluation, computing, and recording of regulated parameter	Section 3.1
§ 63.1209(b)(5)	Calculation of rolling averages	Section 3.1
§ 63.1209(f)(1)	§ 63.1211(c) requires that CMS are installed, calibrated, and operational by the compliance date	CMS PET Plan

Notes:
PET Performance Evaluation Test
SSMP Startup, Shutdown, Malfunction Plan
SDP Standard Division Practices

The data collected from CMS instrumentation is used to demonstrate the unit's compliance with the performance requirements promulgated in the Interim HWC Maximum Achievable Control Technology (MACT) standard. The QA Program outlines procedures used to verify that the CMS are properly calibrated and collecting accurate data on an ongoing basis.

Due to the similarity of the three CMS systems (one for each incinerator system), general references to a CMS system or incinerator system in this document will imply all three systems. Information that is only applicable to one or two of the three systems will be clearly identified.

This document is organized as follows:

Section 1.0	Introduction and Background
Section 2.0	CMS Calibration and Preventive Maintenance
Section 3.0	CMS Recordkeeping and Reporting
Section 4.0	CMS Corrective Actions

This plan also assimilates information and procedures found in other documents. As required by § 63.6(e)(3)(vi), other documents containing procedures or information referred to in this plan will be made available for inspection when requested by the Administrator.

The remainder of this section provides an overview of the incineration system followed by a discussion on the CMS instrumentation. Section 2.0 discusses CMS initial and continuing calibration and preventive maintenance requirements. Section 3.0 addresses requirements related to facility documentation and reporting. Section 4.0 defines and discusses nonstandard operations of the CMS and applicable corrective actions.

1.1 Summary of Facility Information

Brief summaries which describe the fixed hearth incinerators and the rotary kiln incinerator are presented in this section.

1.1.1 Fixed Hearth Incinerators

Each of the fixed hearth incinerators includes the following components:

- Feed equipment

- Primary and secondary combustion chambers
- Lime injection system
- Spray dryer absorber (SDA)
- Fabric filter baghouse
- Solids and ash removal systems
- Induced draft (ID) fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes and gaseous feedstreams are thermally treated in the fixed hearth incinerators. Solid waste is fed to the primary (lower) combustion chamber via a feed conveyor system and pneumatic ram. Liquid waste from tanks and tanker trucks are fed to the primary combustion chamber through two atomized liquid injectors. Liquid waste from containers are fed to the primary combustion chamber through a specialty feed injector. A gaseous feedstream is fed to the Unit 2 primary combustion chamber directly from gas cylinders. Off gases from a hooded feed emission control system and from a waste handling glove box are fed directly to the Unit 3 secondary combustion chamber. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the SDA, which provides acid gas removal and cooling of the combustion gas. Combustion gas exits the SDA and is distributed to the fabric filter baghouses, which provide particulate matter removal. The induced draft fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

Hot, wet gas is extracted downstream of the baghouse through a continuous emissions monitoring system. This system features a multi-component infrared gas analyzer that detects hydrogen chloride, carbon monoxide, and water vapor concentrations. An integrated zirconium oxide-based analyzer detects oxygen concentrations.

1.1.2 Rotary Kiln Incinerator

The rotary kiln incinerator includes the following components:

- Waste feed system
- Primary and secondary combustion chambers
- Tempering chamber
- Lime injection system
- Spray dryer absorber

- Carbon injection system
- Fabric filter baghouse
- Solids and ash removal systems
- ID fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes are thermally treated in the rotary kiln incinerator. Solid wastes are fed to a ram feeder via a clamshell, a drum feed conveyor, and an auxiliary feed conveyor. A hydraulic ram pushes the solid waste into the kiln. Liquid waste from tanks and tanker trucks is fed to the primary and secondary combustion chambers through atomized liquid injectors. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the tempering chamber, which provides cooling of the combustion gases. The combustion gas exits the tempering chamber and is distributed between two identical SDAs, which provide acid gas removal and additional gas cooling. A carbon injection system is utilized for controlling dioxin/furan and mercury emissions. The activated carbon is air injected into the combustion gas immediately downstream of the convergence of combustion gases from the SDAs. From the SDAs, combustion gas is distributed to fabric filter baghouses, which provide particulate matter removal. The ID fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

Hot, wet gas is extracted downstream of the ID fan through a continuous emissions monitoring system. This system features a multi-component infrared gas analyzer that detects hydrogen chloride, carbon monoxide, and water vapor concentrations. An integrated zirconium oxide-based analyzer detects oxygen concentrations.

1.2 CMS Instrumentation

This section describes the CMS instruments used monitor regulated process parameters for demonstrating on-going compliance with the Interim HWC MACT emission standards. A summary of specifications for CMS instrumentation is provided in Table 1-2.

The Interim HWC MACT standard requires all CMS's be installed in locations that provide representative measurements of emissions or process parameters. All CMS

Table 1-2

CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 2						
High BTU Liquid Feedrate	Mass Flowmeter	FT-215	Micro Motion	D 40S-SS	0-3,600 lb/hr	Feed Line
High BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Weigh-Tronix	WI-.130	0-60,000 lb	Feed Line
Low BTU Liquid Feedrate	Mass Flowmeter	FT-216	Micro Motion	D 40S-SS	0-3,600 lb/hr	Feed Line
Low BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Weigh-Tronix	WI-.130	0-60,000 lb	Feed Line
Specialty Feed Weight	Weigh Scale	WT-204	Toledo	8140 EXP	0-4,000 lb	# 204 Specialty Feeder
Drummed Solids Feed Weight	Weigh Scale	WT-210	Toledo	A140	0-400 lb	Solid Charge Conveyor
Cylinder Gas Feedrate	dP Cell	FT-217	Yokogawa	YA11F	0-10 in. w.c. (0-60 lb/min)	Cylinder Gas Feed System
PCC Temperature	Type K Thermocouple	TT-200A/B	Modicon	B883-200	0-2500 °F	Primary Chamber
SCC Temperature	Type K Thermocouple	TT-219A/B	Modicon	B883-200	0-2500 °F	Secondary Chamber
PCC Pressure	Pressure Transmitter	PT-200	Rosemont	1151DP	-7.5 to 2.5 in. w.c.	Primary Chamber
ESV Position	Position Switch	ZS-224	Square-D	9007 CG2B2	open/close	Emergency Stack
Baghouse Inlet Temperature	Type K Thermocouple	TT-270	Modicon	833-200	0-2500 °F	SDA Outlet
Combustion Gas Flow Rate	dP Cell	FT-283	Rosemount	1151DR	0-20,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-289	COSA	ZFN-11YA1-2Z1	0-25%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-288E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-288	Fischer & Porter	10D1475	0 – 10 GPM	SDA Penthouse
Lime Slurry Density	Density Transducer	AT-968	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	SDA Penthouse

Table 1-2(continued)

CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 3						
High BTU Liquid Feedrate	Mass Flowmeter	FT-315	Micro Motion	DS-040	0-3,600 lb/hr	Feed Line
High BTU Liquid Direct Injection Feedrate	Scale	WT-315 DI	Weigh-Tronix	WI-130	0-60,000 lb	Feed Line
Low BTU Liquid Feedrate	Mass Flowmeter	FT-316	Micro Motion	DS-040	0-3,600 lb/hr	Feed Line
Low BTU Liquid Direct Injection Feedrate	Scale	WT-315 DI	Weigh-Tronix	WI-130	0-60,000 lb	Feed Line
Specialty Feed Weight	Weigh Scale	WT-304	Toledo	AI40 EXP	0-2,000 lb	#304 Hooded Feeder
Drummed Solids Feed Weight	Weigh Scale	WT-310	Toledo	A140	0-400 lb	Solid Charge Conveyor
PCC Temperature	Type K Thermocouple	TT-300A/B	Modicon	883-200	0-2500 °F	Primary Chamber
SCC Temperature	Type K Thermocouple	TT-319A/B	Modicon	883-200	0-2500 °F	Secondary Chamber
PCC Pressure	Pressure Transmitter	PT-300	Rosemount	1151 dP	-7.5 to 2.5 in. w.c.	Feed Line
TRV Position	Position Switch	ZS-324	Square-D	9007 CG2B2	open/close	Emergency Stack
Baghouse Inlet Temperature	Type K Thermocouple	TT-370	Modicon	833-200	0-2500 °F	SDA Outlet
Combustion Gas Flow Rate	dP Cell	FT-383	Rosemount	1151 DR	0-20,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-389	COSA	ZFN-11YA1-2Z1	0-25%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-388E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-388	Fischer & Porter	10D1475	0 – 10 GPM	SDA Penthouse
Lime Slurry Density	Density Transducer	AT-969	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	SDA Penthouse

Table 1 (continued)
CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 4						
Waste Feedrate to X-10 Nozzle	Mass Flowmeter	FT-129	Micro Motion	DS100S 128	0-7,000 lb/hr	Feed Line
Waste Feedrate to X-11 Nozzle	Mass Flowmeter	FT-138	Micro Motion	D100S-HY	0-6,000 lb/hr	Feed Line
Waste Feedrate to X-12 Nozzle	Mass Flowmeter	FT-145	Micro Motion	DL100S-SS	0-8,000 lb/hr	Feed Line
Waste Feedrate to X-22 Nozzle	Mass Flowmeter	FT-212	Micro Motion	D1D00S-SS	0-7,000 lb/hr	Feed Line
Clam Shell Feed Weight (shredded solids)	Load Cell	WT-001	Toledo	8140	0-2,000 lb	Ram Feed Hopper
Drum Conveyor Solids Weight	Load Cell	WT-014A	Toledo	8140	0-1,000 lb	Drum Conveyor
Auxiliary Conveyor Solids Weight	Load Cell	WT-14B	Toledo	8140	0-200 lb	Auxiliary Conveyor
PCC Temperature	Pyrometer	TT-305A/B	Ircon	Modline4 44-99-F-1-0-1	0-3,000 °F	Kiln Outlet
SCC Temperature	Type R Thermocouple	TT-317A/B	Chessel	3510	0-3,000 °F	SCC Outlet
PCC Pressure	Pressure Transmitter	PT-300	Rosemount	1151DR2F	-9.0 to 1.0 in. w.c.	Kiln Hood
Surge Vent Position	Position Switch	ZSC-026	Square-D	9007 CG2B2	open/close	Kiln Face
TRV Position	Position Switch	ZSC-316	Square-D	9007 CG2B2	open/close	Emergency Stack
Carbon Feedrate	Feeder	C-17	K-Tron	K2T35	0-100	Carbon Inject. System
Carbon Injection Carrier Gas Supply Pressure	Pressure Switch	PSL-438A	Dwyer	3330	Trip Points: ± 5 in. w.c.	Carbon Injection Line
Carbon Feeder Discharge Pressure	Pressure Switch	PSH-438B	Dwyer	3215	Trip Points: < 3 psig > 13 psig	Carbon Injection Line

Table 1 (continued)
CMS Instrument Specifications

Application	Instrument	Tag Number	Manufacturer	Model	Operating Range	Location
Unit No. 4 (continued)						
SDA X-18 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-417A/B	Modicon	B883-200	0-2,500 °F	SDA X-18 Outlet
SDA X-19 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-418A/B	Modicon	B883-200	0-2,500 °F	SDA X-19 Outlet
Combustion Gas Flowrate	Pitot Tube/dP Cell	FT-559A/B	Automation Service	1151DRF2283	0-55,000 acfm	Stack
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-560A/B	COSA	ZFN-11YA1-2Z1	0-20%	CEMS Building
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-556E	EcoChem	MC3	0-200 / 0-3000 ppmv	CEMS Building
Stack Hydrogen Chloride Concentration					0-1000 ppmv	
Stack Gas Moisture Concentration					0-60%	
Lime Slurry Flow Rate	Mag. Flowmeter	FT-615	Fischer & Porter	10D1475	0 – 80 GPM	SDA Nozzles
Lime Slurry Density	Density Transducer	DIT-609	Solartron Mobrey	7846	0 – 100 Lb/Ft^3	Lime Silo

operating parameter measurement devices at the Veolia facility are installed in compliance with this requirement. A description of the types of CMS instrumentation follows:

Mass/Feedrate Monitors: Liquid waste feedrates from tanks are measured by coriolis mass flowmeters. Direct inject liquid feedrates from tanker truck are calculated using the continuously monitored weight of the tanker. All solid waste charges are weighed using a scale/load cell prior to being feed to the incinerator. These measurements are used to calculate pumpable waste, total waste, and constituent feedrates.

For Unit 4, the output of a calibrated feeder is utilized to calculate the feedrate of powdered activated carbon, which is injected into the plenum upstream of the baghouses.

Pressure/Differential Pressure Monitors: Primary combustion chamber pressure is measured by diaphragm actuated pressure transmitters. The position of the damper immediately upstream of the ID fan is varied to control stack gas flowrate and to maintain kiln combustion chamber negative pressure (draft). The primary combustion chamber pressure is interlocked with waste feeds.

For Unit 2, pressure drop in the cylinder gas feedstream is measured and converted to a feedrate. The feedrate is used to calculate this feedstream's contribution to the chlorine, low volatile metals, and semivolatile metals feedrates to the incinerator.

For Unit 4, pressure switches are utilized to ensure that the carbon feeder discharge pressure, and the carbon injection air blower discharge pressure are within the design limits.

The pressure drop across a pitot tube in the stack is continuously monitored and used to calculate the stack gas flowrate.

Temperature Monitors: For Units 2 and 3, redundant thermocouples are used to measure the temperature in both combustion chambers. A thermocouple is also located at the exit to the SDA and is the primary element for the SDA exit temperature control loop.

Unit 4 is equipped with redundant pyrometers in the primary chamber and redundant thermocouples in the secondary chamber. Each SDA outlet is equipped with redundant thermocouples used for temperature control and monitoring of the baghouse inlet temperature.

Emergency Safety Vent Position Monitors: The position of the emergency safety vent (ESV) is indicated as open or closed by a position transmitter. No waste or fuel can be fed if the ESV position is "open". The Emergency Safety Vent (ESV) Plan provides details on the ESV systems.

Bag Leak Detection System: A triboelectric sensor is located downstream of the ID fan and monitors the relative particulate matter loading of the combustion gas exiting the baghouses. Alarms and interlocks based on this relative measurement are indications of a potential bag leak or failure. Procedures for setup and adjustments to the bag leak detection system are not covered by this QC program. The Operation and Maintenance Plan provides details on the bag leak detection system.

Continuous Emissions Monitoring System: The CEMS continuously samples and analyzes stack gas for the concentrations of carbon monoxide (CO), Hydrogen Chloride (HCl), and moisture using a multicomponent infrared photometer. The oxygen concentration is analyzed simultaneously using a zirconium oxide analyzer. These data are used to calculate the stack gas CO concentration on a dry basis, corrected to 7% O_2. The CEMS QA Plan provides additional details on the CEMS.

2.0 CMS CALIBRATION AND PREVENTIVE MAINTENANCE

This section discusses the calibration and preventive maintenance requirements to meet the requirements of § 63.8(d).

2.1 CMS Calibration

To ensure ongoing compliance with the Interim HWC MACT standard, it is essential that the data collected from the CMS be measured and recorded in an accurate manner. Initial calibrations, subsequent calibration, and CEMS calibrations are described in this section.

2.1.1 Initial CMS Calibration

As part of Veolia's Quality Control Program, the CMS instruments were initially calibrated prior to the Interim HWC MACT compliance date. Calibration prior to the compliance date is required so that all collected data are reliable and accurate. All initial calibration data are part of the operating record. Initial calibrations of new/replacement instruments will be performed per the manufacture's written procedures. In lieu of an initial calibration for new/replacement instruments or instrument components, the facility may use a manufacturer's certification.

2.1.2 Subsequent CMS Calibration

Subsequent calibrations on CMS instrumentation will be performed as needed and in accordance with the manufacture's written procedures. Calibrations will be performed as corrective measures for high calibration drift. Calibrations may be required when restoring CMS instruments after maintenance or repairs. All calibration adjustments will be documented by records of the calibration drift determined before and after the instrument was serviced.

Some instruments such as differential pressure cells must be removed from service and bench calibrated. To minimize downtime these instruments may be replaced with a calibrated spare. The Unit 4 primary combustion chamber pyrometers will be replaced at least annually with a factory calibrated pyrometer. Electronic checks and replacements of thermocouples will be performed per the facility's Thermocouple Calibration, Operation, and Replacement Procedure.

A calibration record form is available for each CMS instrument and will be used to document calibration audits, calibrations, and replacements. The most recently completed calibration record documents that the instrument in service meets the quality control criteria set forth by this program. These calibration records contain "calibration notes" which provide the instrument technician with procedures specific to a given instrument. The calibration record forms for CMS instruments are incorporated in this QC Program by reference.

2.1.3 CEMS Calibration Audits and Calibration

CEMS QA/QC procedures are provided by the *Continuous Emission Monitoring System Quality Assurance Plan.* These procedures are maintained at the facility and describe the requirements for CEMS drift checks, audits, calibrations, preventive maintenance, and recordkeeping.

2.2 CMS Calibration Audits

CMS calibration audits are performed to determine the calibration drift (CD) of CMS instruments. Calibration Drift (CD) is the bias between the CMS instrument reading and a calibration reference. Table 2-1 presents the requirements for CMS calibration audits. Each CMS instrument will be subjected a calibration audit at the frequency indicated in Table 2-1. The calibration audit will be performed at the low-level (zero) and high-level checks indicated. The calibration check will confirm that all process variable indications (e.g., local reading, control room display) at the high-level value agree with the calibration reference within ½ of the required tolerance. Calibration adjustments/corrective actions must be taken if this calibration drift is greater than ½ of the required tolerance. If the calibration drift exceeds the required tolerance, the instrument is considered out-of-control. Section 4.0 describes the corrective actions for out-of-control, inoperative, and malfunctioning CMS.

If the accuracy of a CMS instrument is in question, the CD is determined and documented prior to performing maintenance, repairs, or adjustments. The troubleshooting/calibrations of CMS instruments will be performed in a manner consistent with the manufacturer's written procedures and recommendations. The CD determined after calibrations/corrective actions have been taken will document the effects of the adjustments and demonstrate that the instrument is performing properly.

Calibration records will document CD, which is an indicator of the stability of the CMS calibration over time. The amount of drift and stability is dependant on the type of instrument and the calibration frequency. Veolia may increase or decrease the frequency of particular calibration audits to the extent warranted by an assessment of an instrument's stability. Veolia will maintain regularly scheduled calibration audit intervals for each CMS instrument. Calibrations will be performed to prevent excessive CD and to maintain the validity of the data collected from the monitoring system.

Table 2-1
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Calibration Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 2						
High BTU Liquid Feedrate	Mass Flowmeter	FT-215	Annually	0-5 lb/min	15-25 lb/min	10%
High BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Quarterly	0 lb	25,000 lb	10%
Low BTU Liquid Feedrate	Mass Flowmeter	FT-216	Annually	0-5 lb/min	15-25 lb/min	10%
Low BTU Liquid Direct Injection Feedrate	Scale	WT-215DI	Quarterly	0 lb	25,000 lb	10%
Specialty Feed Weight	Weigh Scale	WT-204	Quarterly	0 lb	~500 lb	10%
Drummed Solids Feed Weight	Weigh Scale	WT-210	Quarterly	0 lb	~50 lb	10%
Cylinder Gas Feedrate	dP Cell	FT-217	Annually	0 in. w.c.	10 in. w.c.	10%
Primary Combustion Chamber Temperature	Type K Thermocouple	TT-200A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Secondary Combustion Chamber Temperature	Type K Thermocouple	TT-219A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-200	Quarterly	-7.5 to -6.5	1.5 to 2.5 in w.c.	10%
ESV Position	Position Switch	ZS-224	Annually	AWFCO interlock energized when open		Pass
Baghouse Inlet Temperature	Type K Thermocouple	TT-270	See Calibration Record Form			
Combustion Gas Flow Rate	dP Cell	FT-283	Annually	0-0.05 in. w.c.	0.45-0.50 in. w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-288	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	AT-968	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-289	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-288E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

Table 2-. .ontinued)
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Calibration Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 3						
High BTU Liquid Feedrate	Mass Flowmeter	FT-315	Annually	0-5 lb/min	15-25 lb/min	10%
High BTU Liquid Direct Injection Feedrate	Scale	WT-315DI	Annually	0 lb	25,000 lb	10%
Low BTU Liquid Feedrate	Mass Flowmeter	FT-316	Annually	0-5 lb/hr	15-25 lb/min	10%
Low BTU Liquid Direct Injection Feedrate	Scale	WT-315DI	Annually	0 lb	25,000 lb	10%
Specialty Feed Weight	Weigh Scale	WT-304	Quarterly	0 lb	~200 lb	10%
Drummed Solids Feed Weight	Weigh Scale	WT-310	Quarterly	0 lb	~50 lb	10%
Primary Combustion Chamber Temperature	Type K Thermocouple	TT-300A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Secondary Combustion Chamber Temperature	Type K Thermocouple	TT-319A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-300	Quarterly	-7.5 to -6.5	1.5 to 2.5 in w.c.	10%
ESV Position	Position Switch	ZS-324	Annually	AWFCO interlock energized when open		Pass
Baghouse Inlet Temperature	Type K Thermocouple	TT-370	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Combustion Gas Flow Rate	dP Cell	FT-383	Annually	0-0.05 in. w.c.	0.45-0.50 in. w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-388	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	AT-969	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-389	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-388E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

Table 2 (Continued)
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Drift Check/Accuracy Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 4						
Waste Feedrate to X-10 Nozzle	Mass Flowmeter	FT-129	Annually	0-5 lb/min	15-25 lb/min	10%
Waste Feedrate to X-11 Nozzle	Mass Flowmeter	FT-138	Annually	0 lb	21,000 lb	10%
Waste Feedrate to X-12 Nozzle	Mass Flowmeter	FT-145	Annually	0-5 lb/min	15-25 lb/min	10%
Waste Feedrate to X-22 Nozzle	Mass Flowmeter	FT-212	Annually	0 lb	21,000 lb	10%
Clam Shell Feed Weight (shredded solids)	Load Cell	WT-001	Quarterly	0 lb	~200 lb	10%
Drum Conveyor Solids Weight	Load Cell	WT-014A	Quarterly	0 lb	~ 100 lb	10%
Auxiliary Conveyor Solids Weight	Load Cell	WT-14B	Quarterly	0 lb	~50 lb	10%
Primary Combustion Chamber Temperature	Pyrometer	TT-305A/B	Replace at least annually with factory calibrated Pyrometer			
Secondary Combustion Chamber Temperature	Type R Thermocouple	TT-317A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Primary Combustion Chamber Pressure	Pressure Transmitter	PT-300	Quarterly	-9.0 to -8.0 in. w.c.	0 to 1.0 in. w.c.	10%
Surge Vent Position	Position Switch	ZS-026	Annually	AWFCO interlock energized when open		Pass
ESV Position	Position Switch	ZS-324	Annually	AWFCO interlock energized when open		Pass
Carbon Feedrate	Feeder	WT-438	Quarterly	0 lb/min	6-30 lb/min	10%
Carbon Injection Carrier Gas Low Pressure	Pressure Switch	PSL-438A	Annually	Energize Switch		Pass
Carbon Injection Carrier Gas High Pressure	Pressure Switch	PSH-438B	Annually	Energize Switch		Pass

Table 2-[illegible] (continued)
CMS Calibration Audit Requirements

Application	Instrument	Tag Number	Frequency of Drift Check/Accuracy Audit	Low Level Check Point	High Level Check Point	Tolerance
Unit No. 4 (continued)						
SDA X-18 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-417A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
SDA X-19 Outlet Temperature (Baghouse Inlet Temperature)	Type K Thermocouple	TT-418A/B	Refer to the Thermocouple Calibration, Operation, and Replacement Procedure			
Combustion Gas Flowrate	Pitot Tube/dP Cell	FT-559A/B	Annually	0 in. w.c.	1.74 in w.c.	10%
Lime Slurry Flow Rate	Mag. Flowmeter	FT-615	Annually	0 gpm	1-10 gpm	10%
Lime Slurry Density	Density Transducer	DIT-609	Replace, as required, with factory serviced transducer			
Stack Gas Oxygen Concentration	Zirconium Oxide Analyzer	AT-560A/B	Per CEMS QA Plan			
Stack Gas Carbon Monoxide Concentration	Multicomponent Infrared Photometer	AT-556E	Per CEMS QA Plan			
Stack Hydrogen Chloride Concentration						
Stack Gas Moisture Concentration						

2.3 Preventive Maintenance

Veolia takes daily proactive measures to assure that potential problems with the CMS are quickly identified and avoided, if possible. Daily maintenance checks include:

- Verification that process variables are reasonable
- Comparison of readings from redundant instruments
- Cleaning and visual check of monitoring equipment
- Communication between operators and instrument technicians

These checks are documented on a daily logsheet for each incinerator. The preventive maintenance on the CMS also includes the calibration audits previously described. All necessary parts for routine repairs of the affected CMS equipment are made readily available onsite. A spare parts inventory for each component of the CMS is included in the records maintained by the Maintenance Department. Additional details regarding preventive maintenance applicable to the CMS are provided in the facility's Operation and Maintenance Plan and the CEMS QA Plan.

3.0 CMS RECORDKEEPING AND REPORTING

This section discusses recordkeeping and reporting requirements for CMS instrumentation as specified by § 63.1211.

3.1 Recordkeeping

Veolia will follow the recordkeeping requirements as specified in § 63.10(b), including the semiannual excess emissions and CMS performance report. Veolia will maintain these records of CMS data for a minimum of 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent 2 years of data will be retained onsite. Below is a brief summary of these requirements.

Veolia will maintain records on the following:

- The occurrence and duration of each startup, shutdown, or malfunction of operation.
- The occurrence and duration of each malfunction of the air pollution control and monitoring equipment. Maintenance performed on the air pollution control and monitoring equipment
- Actions taken during periods of startup, shutdown, and malfunction (including corrective actions to restore the process or air pollution control system to normal operation) when such actions are different the procedures outlined in the SSMP
- All information necessary to demonstrate conformance with the SSMP
- Each period in which a CMS is malfunctioning or inoperative (including out-of-control periods)
- All required measurements needed to demonstrate compliance with a relevant standard.
- All results of performance tests, CMS performance evaluations, and opacity and visible emission observations
- All CMS calibration checks
- All adjustments and maintenance performed on CMS
- All required CMS measurements (including data recorded during unavoidable CMS breakdowns and out-of-control periods)
- The date and time identifying each period during which the CMS was inoperative except for zero (low level) and high level checks

- The date and time identifying each period during which the CMS was out-of-control as defined by § 63.8(c)(7)
- The specific identification (date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard, that occurs during periods other than startup, shutdowns, and malfunctions.
- The nature and cause of any malfunction
- The corrective action taken or preventive measures adopted
- The nature of the repairs or adjustments to the CMS that was inoperative or out-of-control
- The total process operating time during the reporting period
- All procedures that are part of quality control program developed and implemented for CMS under § 63.8(d).

All CMS instrumentation will be operated on a continuous basis. The detector response will be evaluated at least every 15 seconds, and these values will be used to calculate regulated parameters. For parameters interlocked with the AWFCO system on an hourly rolling average basis, raw data will be averaged and recorded at least once per minute. One minute averages will be used to calculate the hourly rolling averages. The pumpable waste, total waste, and constituent feedrate operating parameter limits are bases on rolling totals in lieu of rolling averages.

An integral part of the CMS is the data acquisition and data historian systems, which records all operating data generated by the CMS instruments. The data historian and associated archive files are part of the operating record. CMS instrument calibrations, maintenance activities, and corrective actions are recorded and kept in the operating record. All data collected during CMS PETs are recorded and kept in the operating record.

3.2 Reporting

Veolia will follow the reporting requirements as specified in § 63.10. In addition, Veolia will develop and include in the operating record a Documentation of Compliance (DOC) per § 63.1211(c). The DOC must include a signed and dated certification that the CEMS and CMS are installed, calibrated, and continuously operating in compliance with the requirements of Subpart EEE.

Raw data from the CMS will be collected, reduced as described in § 63.8(g), and included in the CMS PET report. This data will be analyzed to determine compliance with the HWC MACT and the results will be submitted as part of the notification of compliance required by § 63.1207(j).

The content and deadline requirements for the excess emissions and monitoring system performance reports are specified in § 63.10(e)(3)(v). The requirements for the summary report are given in § 63.10(e)(3)(vi).

As noted in § 63.10(e)(3)(vii), Veolia is required to only submit the summary report if the total duration of excess emissions or process or control system parameter exceedances for the reporting period is less than one percent of the total operating time for the reporting period, and CMS downtime for the reporting period is less than five percent of the total operating time for the reporting period. Conversely, additional reporting is required by § 63.10(e)(3)(viii) if the total duration of exceedances, or the total CMS downtime during the reporting period, is greater than the allowable percentage of the reporting period. Table 3-1 provides a list of Veolia's reporting requirements.

Table 3-1 Reporting Requirements

Regulatory Citation	Description	Frequency
§ 63.1211(c)	Record Documentation of Compliance in the operating record	Once
§ 63.10(d)(2)	Before Title V permit has been issued, owner operator must submit results of performance test.	By the 60th day following every performance test
§ 63.10(d)(2)	After Title V permit has been issued, owner operator must submit results of required performance tests.	By the 60th day following required performance test
§ 63.10(d)(4)	Progress reports	As specified in written extension of compliance
§ 63.10(d)(5)(i)	Periodic startup, shutdown, and malfunction reports (during reporting period)	Submitted simultaneous with excess emission report
§ 63.10(d)(5)(ii)	Startup, shutdown, and malfunction reports when actions are taken that are inconsistent with SSMP.	2 working days from commencement of action, followed with a letter explaining extent within 7 working days.
§ 63.10(e)(3)(i)	Submittal of semiannual excess emissions and CMS performance report	Semiannually - by the 30th day following the end of each calendar half performance test

4.0 CMS CORRECTIVE ACTIONS

If a CMS is found to be out-of-control, inoperative, or malfunctioning; corrective actions must be taken to return the CMS to normal operation. Definitions used in determining the type of corrective action required are given below.

Out-of-control: A CMS is out-of-control if:

- The zero (low level), mid-level, or high-level calibration drift exceeds two times the applicable CD specification in the applicable performance specification or procedure; or
- The CMS fails a performance test audit, relative accuracy audit, relative accuracy test audit, or linearity test audit.

The only applicable performance specification to the CMS is Performance Specification (PS) 4B of 40 CFR Part 63, Appendix B. PS 4B applies to the O_2 and CO CEMS. The requirements of PS 4B and additional requirements Veolia imposes on the CEMS are detailed in the CEMS QA Plan. In the absence of promulgated performance specification applicable to non-CEMS CMS instruments, Veolia has self-imposed a high-level CD specification, as described in Section 2.0.

When a CMS is out-of-control, Veolia will take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out-of-control. Corrective actions and retesting will continue until the CMS is returned to normal operation. The beginning of the out-of-control period is the hour that the calibration drift indicates that the CMS has exceeded its performance specifications. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the CMS is within its allowable limits. During the period the CMS is out-of-control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

Veolia will submit all information concerning out-of-control periods, including start and end dates and hours, and descriptions of corrective actions taken, in the excess emissions and continuous monitoring system performance report required by § 63.10(e)(3).

Malfunction: For use in this plan, malfunction is defined as any sudden, infrequent, and not reasonably preventable failure of air pollution control or monitoring equipment.

Malfunction also includes the failure of a process or any process equipment to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The *Program of Corrective Actions for Malfunctions* is Attachment 4 of the SSMP Plan. This program addresses how the incinerator will be operated and maintained during malfunctions. In this program, potential malfunctions are listed for each portion of the incinerator system. The malfunctions are events that are recognized by the operator, or indicated by an alarm, and threaten to cause an exceedance. In the response to the malfunction and/or alarms, the operator will apply discretion and attempt to maintain the incinerator system within regulatory limits. In the program of corrective actions, potential causes of each malfunction are listed. The operator will utilize process knowledge, job experience, and, if needed, assistance from other personnel to identify the cause of the malfunction. For each potential cause, actions to correct the failure are listed. The corrective actions prescribed may require the collaboration of multi-disciplined personnel who are qualified to return the incinerator system to proper working conditions (i.e., maintenance personnel, instrument technicians, engineering)

CONTINUOUS EMISSIONS MONITORING SYSTEM QUALITY ASSURANCE PLAN

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October 2008

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1.0 INTRODUCTION

Veolia ES Technical Solutions, LLC (Veolia) owns and operates two fixed hearth incinerators (Units 2 and 3) and a transportable rotary kiln incinerator (Unit 4) at its facility located in Sauget, Illinois. These incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWCs), Part 63, Subpart EEE (§§63.1200 to 63.1221). The NESHAP for HWCs specifies emissions standards which reflect emissions performance of maximum achievable control technologies (MACT), and is commonly referred to as the HWC MACT.

For each incinerator, Veolia utilizes a continuous emissions monitoring system (CEMS) for demonstrating on-going compliance with the carbon monoxide (CO) emission standard. These CEMS are subject to the requirements of the Appendix to 40 CFR Part 63, Subpart EEE—*Quality Assurance Procedures for Continuous Emissions Monitors Used for Hazardous Waste Combustors*. This plan has been developed per the CEMS quality assurance (QA)/quality control (QC) requirements. Implementation of this plan will ensure that the CEMS generates, collects, and reports valid data that is precise, accurate, complete, and of a quality that meets the requirement of the HWC MACT Standard and the applicable performance specification.

1.1 Description of CEMS

Each incinerator is equipped with an EcoChem Analytics MC3 CEMS, which consists of the following major components:

- Heated stack sample probe
- Heated traced umbilical
- Heated sample pump
- EcoChem MC3 multicomponent infrared (IR) gas analyzer
- Zirconium oxide-based oxygen analyzer
- System controller and data acquisition system

Hot, wet stack gas is drawn through the heated stack sample probe and heat traced umbilical using a heated sample pump. The sampling location is downstream of the induced draft (ID) fan. The umbilical supplies instrument air to the filter probe to allow for automated periodic blowback. It also supplies calibration gases through the sampling system. The stack gas sample is maintained at approximately 185°C through the sampling equipment and analyzer sample cell to prevent the removal of pollutants from the sample through contact with condensed moisture.

The sample cell consists of multiple mirrors that were adjusted and aligned at the factory to set the path length appropriate for the specific application. The MC3 multicomponent IR photometer uses a Gas Filter Correlation analytical technique to continuously monitor the stack gas concentrations of HCl and CO. The Single Beam Dual Wavelength analytical technique is used to continuously monitor stack gas water vapor (H_2O) concentrations.

A technical description and specification for the CEMS is presented in Section 2.0 of the MC3 *Operations Guide, Section* 2.1.1 documents the lowest range for each component and an accuracy of ±2% of full-scale value. The lower threshold is 1% of the lowest range. These technical specifications document that the CEMS is capable of meeting the requirements of the Appendix to Part 63, Subpart EEE and Performance Specification 4B of 40 CFR Part 60, Appendix B.

The system controller controls the sampling system temperatures, purge/blowback, calibration checks, data handling, messaging, and alarms. The CEMS controller is integrated with the incinerator data acquisition system, automatic waste feed cutoff (AWFCO) system, and the main control system.

All three incinerators are equipped with COSA model ZFN-11YA1-2Z1 O_2 analyzers. These analyzers are zirconium oxide cells and are located downstream of the ID fan.

1.2 Overview of Regulatory Requirements

Cross-references and summaries of the applicable regulatory requirements are presented in Table 1-1. This table indicates the sections, tables, and figures of this document that address each particular requirement.

Table 1-1
Regulatory Requirements for the CEMS QC Program and the CEMS QA Plan

Regulatory Reference: Appendix to Subpart EEE of Part 63	Description	CEMS QA Plan Section
Section 3.1.a.1	Checks for component failures, leaks, and other abnormal conditions	3.0 3.1
Section 3.1.a.2	Calibration of CEMS	2.2
Section 3.1.a.3	Calibration Drift determination and adjustment of CEMS	2.1, 2.2 Appendix A
Section 3.1.a.4	Integration of CEMS with the AWFCO system	4.0
Section 3.1.a.5	Preventive Maintenance of CEMS (including spare parts inventory)	3.0 Appendix A
Section 3.1.a.6	Data recording, calculations, and reporting	4.1 5.0
Section 3.1.a.7	Checks of record keeping	5.0
Section 3.1.a.8	Accuracy audit procedures, including sampling and analysis methods	2.3, 2.5 Appendix A
Section 3.1.a.9	Program of corrective action for malfunctioning CEMS	3.4
Section 3.1.a.10	Operator training and certification	6.0
Section 3.1.b	Reporting of excessive inaccuracies	5.0
Section 3.2.1	QA responsibilities	5.0
Section 3.2.2	Schedules for: (1) daily checks (2) periodic audits (3) preventive maintenance	(1) 3.0, 3.1 (2) 2.0, Table 2-1 (3) 3.0
Section 3.2.3	Check lists and data sheets	Appendix A
Section 3.2.4	Preventive maintenance procedures	3.0

Table 1-1 (Continued)

Regulatory Requirements for the CEMS QC Program and the CEMS QA Plan

Regulatory Reference: Appendix to Subpart EEE of Part 63	Description	CEMS QA Plan Section
Section 3.2.5	Description of the media, format, and location of all records and reports	5.0
Section 3.2.6	Provisions for review of the CEMS data; revisions or updates of the QA plan based on review	5.0
Section 4.1	Check, record, quantify: (1) Zero Drift (2) Calibration Drift	2.1
Section 4.2	Recording Requirements for: (1) Zero Drift (2) Calibration Drift	2.1 Appendix A
Section 4.3	Daily System Audit	3.1
Section 4.4	Data recording and reporting	5.0
Section 5.1	Relative Accuracy Test Audit (RATA)	2.5
Section 5.2	Absolute Calibration Audit (ACA)	2.3
Section 5.3	Interference Response Test (IRT)	2.4
Section 5.4	Excessive audit inaccuracies	Table 2-1 2.3 2.5

2.0 CEMS CALIBRATIONS AND PERFORMANCE

The CEMS must be operated, calibrated, and maintained to ensure conformance with the Appendix to Part 63, Subpart EEE and the EPA Performance Specification 4B (PS 4B). Calibration drift checks and performance demonstrations are performed periodically on the CEMS based on the following schedule:

- Daily calibration checks for determination of Calibration Drift (CD) and Zero Drift (ZD).
- Quarterly Absolute Calibration Audit (ACA) for determining calibration error (CE) for O_2, CO, and HCl.
- Annual Relative Accuracy Test Audit (RATA) for determining the CEMS relative accuracy (RA) for CO emissions.

The procedures, QC criteria, corrective actions, and recordkeeping associated with these drift checks and audits are described in this section. A summary of the QC criteria and corrective actions is presented in Table 2-1. Blank data sheets are provided in Appendix A.

2.1 Daily Drift Checks

Daily drift checks are automatically initiated by the CEMS controller. During the automated calibration sequence, calibration gases are injected from pressurized cylinders through the sampling system. The sequence starts with the IR analyzer zero gas that is free of any of the constituents analyzed by the IR analyzer. This zero gas may also serve as the span gas for the integrated O_2 analyzer. The zero gas flows through the system with enough time allowed for the analyzer to fully respond to the gas. Then the analyzer response to the zero gas is recorded for one minute and averaged. The next calibration gas in the calibration sequence is the first IR analyzer span gas. This span gas is a calibration standard that has one or more constituent concentrations at the analyzer span value (this gas may also be used as the zero gas for the O_2 analyzer). The first span gas flows through the system to allow the analyzer enough time to fully respond to the gas. Then the analyzer response to the first span gas is recorded for one minute and averaged. This is then repeated for the second span gas and then possibly a third span gas depending upon the composition of the span gases. The total duration of this calibration sequence has been designed to not exceed the 20 minute maximum allowable CEMS downtime while burning hazardous waste.

Table 2-1

Overview of CEMS Performance Requirements

Analyzer Parameter (Span Value)	QC Parameter	Minimum Frequency	QC Limit	Corrective Action
H_2O (60%)	ZD	Daily	±2% of span	Zero Adjustment
O_2 (25%)	ZD and CD	Daily	±0.5% O_2	Zero/Span Adjustment
	CD	Daily	±1.0% O_2	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±1.5% O_2	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [1]	0.5% O_2	Shut off waste, service/calibrate, conduct RATA
	RA	Annually	1.0% O_2	Shut off waste, service/calibrate, repeat RATA
CO (200 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [1]	5%	Shut off waste, service/calibrate, conduct RATA
	RA [2]	Annually	5 ppmdv @ 7% O_2 (See Section 2.5)	Shut off waste, service/calibrate, conduct RATA

1 The ACAs for determining the O_2 and CO CE are conducted quarterly, except in a quarter when a RATA is conducted instead.

2 The RA accuracy for CO is based on the units of the CO emission standard (ppmdv @ 7% O_2). CO data collected from the analyzer during the RATA will include low and or high range values per the normal operating requirements.

Table 2-1 (continued)
Overview of CEMS Performance Requirements

Analyzer Parameter (Span Value)	QC Parameter	Minimum Frequency	QC Limit	Corrective Action
CO (3000 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [3]	5%	Shut off waste, service/calibrate, conduct RATA
HCl (1000 ppm)	ZD and CD	Daily	±3% of span	Zero/Span Adjustment
	CD	Daily	±5% of span for 6 out of 7 day	Shut off waste, service/calibrate, conduct ACA
	CD	Daily	±6% of span	Shut off waste, service/calibrate, conduct ACA
	Cumulative Span Adjustment	Per Adjustment	±9% of span	Shut off waste, service/calibrate, conduct ACA
	CE	Quarterly [4]	5%	Shut off waste, service/calibrate, conduct ACA

[3] The ACAs for determining the O_2 and CO CE are conducted quarterly, except in a quarter when a RATA is conducted instead.

[4] A RATA for HCl may be performed annually in lieu of performing an ACA in that quarter.

The drift for each stack gas constituent is determined as the difference between the known constituent concentration in the calibration gas and the analyzer reading. ZD is the drift determined using zero gas. CD is the drift determined using span gases. ZD and CD are determined daily for O_2, CO, and HCl. ZD for H_2O is also determined daily.

The ZD and CD are recorded by the CEMS datalogger as a percent of full-scale deviation (Dev%). Given that the "span value" is equal to the "full-scale" value, Dev% is calculated as follows:

$$Dev\% = |Drift\ \%|$$

$$Drift\ \% = \frac{reference\ concetration\ \text{-}\ analyzer\ responce}{span\ value} \cdot 100$$

For CO and O_2, if Dev% for CD exceeds the limits specified in the applicable Performance Specifications in 40 CFR Part 60, Appendix B, the analyzer must be calibrated. If the Dev% for CD is greater than the preset tolerance (Tol%) the instrument technician will notify the incinerator operator and waste feeds will be shut off until corrective measures have been taken. The CD tolerances for both O_2 and CO have been set at the two times the performance specification limits. A calibration failure alarm indicates that the analyzer is out-of-control and must be serviced and recalibrated. An ACA must be conducted to document that the analyzer is within the performance specifications prior to resuming hazardous waste burning.

For CO, if the Dev% for CD is greater than 5% for 6 out of 7 days, then the analyzer is out-of-control and must be serviced and recalibrated. An ACA must be conducted to document that the analyzer is within the performance specifications prior to resuming hazardous waste burning.

Similar requirements for drift limits apply to HCl, except that no performance specifications have been promulgated for CEMS monitoring these parameters. In lieu of limits specified by an EPA Performance Specification, Veolia has developed self-imposed performance specification limits for HCl. These limits are specified in Table 2-1.

2.2 Calibration

Calibration of the analyzer will be conducted periodically to ensure that the results of drift checks, ACAs, or RATAs meet the applicable performance specifications.

Calibration for each IR channel (H_2O, CO, and HCl) may be performed daily during the automated calibration sequence used to determine calibration drift. For each calibration gas used during the automated sequence, the automatic calibration will reset the analyzer response to correspond with the known reference concentrations. Any automated calibration adjustment will be made immediately after the analyzer response to the calibration gas is recorded electronically. The drift determined immediately prior to a calibration adjustment is equal to the magnitude of the adjustment. The oxygen analyzer uses a two-point calibration curve. The first calibration point resets the measured concentration of air to 20.94%. The second calibration point resets the measured concentration of a low concentration calibration gas to its known concentration. This calibration is performed manually. To document the calibration adjustment, the actual measurement at each calibration point prior to adjustment will be recorded.

Following service to the MC3 analyzer that could affect its calibration, each IR channel, and the O_2 analyzer will be calibrated. The CEMS Drift and Calibration Data Sheet in the Appendix to this document will be used to track the cumulative span adjustments (i.e., change in the calibration factor). Section 5.5 of the MC3 CEMS *Operations Guide* and Section 4.4 of the MC3 CEMS *System Guide* should be referred to as needed for additional detail regarding calibration of the CEMS.

If the cumulative calibration adjustment for CD is three times the performance specification limits at any time, hazardous waste burning will be cutoff. The analyzer will be serviced, recalibrated, and an ACA will document that hazardous waste burning can recommence. A calibration factor that has been verified through an ACA will become the new reference point for assessing the cumulative adjustments made to correct for calibration drift.

The incinerator can remain on hazardous waste during CEMS drift checks, calibrations, purges, and corrective actions for CEMS failures provided that the CEMS downtime does not exceed 20 minutes. During these times, the instantaneous values used to determine one-minute averages of dry, oxygen corrected concentrations of CO are discarded. This allowance is provided by Section 6.2 and 6.5.1 of the Appendix to Subpart EEE. The applicable regulatory requirements do not limit the frequency that this allowance can be utilized. Typically, this allowance will only be utilized once per day for the daily drift checks. Since the oxygen analyzer cannot be calibrated during the automatic calibration of the IR channels, calibration of the oxygen analyzer will require additional downtime.

If a there is a CEMS failure, the incinerator may remain on hazardous waste provided that the CEMS can be restored within 20 minutes.

Following downtime, the CEMS must be within the performance specifications described in this document. Otherwise, hazardous waste burning will cease until the appropriate corrective measures can be taken. To ensure that the hourly rolling average (HRA) for CO is representative of current operating conditions, CEMS data validity must be at least 75% (i.e., 60 valid one minute averages per 80 minutes of normal operations).

2.3 Absolute Calibration Audit

An ACA is conducted quarterly for O_2, CO (high and low range), and HCl. For O_2 and CO, an ACA is not conducted in the quarter that the required annual RATA is performed. The ACA is conducted according to the calibration error (CE) test procedure described in the Performance Specifications 4B. During the ACA, the analyzer is challenged over each range with EPA Protocol 1 cylinder gases. The EPA Protocol 1 cylinder gases are NIST traceable calibration standards. For a given parameter, the analyzer response is recorded at three measurement points. This is then repeated twice to give three sets of data. The CE at each measurement point is determined as follows:

$$CE = \left|\frac{d}{FS}\right| \cdot 100\%$$

where d is the mean difference between the CEMS response and the known reference concentration and FS is the span value.

For CO and HCl, the CE determined at each measurement point cannot exceed 5%. For O_2, CE cannot exceed 2%. If an ACA fails to pass the QC criterion (i.e., the audit indicates excessive inaccuracy), then hazardous waste burning cannot resume until corrective measures have been taken and a RATA demonstrates that the CEMS is operating within the performance specifications.

2.4 Interference Response Test

The MC3 analyzer corrects for interferences using additive and multiplicative interference tables. These tables were generated per the manufacturer's procedure at the initial setup of the CEMS system. An Interference Response Test (IRT) is listed in the Appendix to Subpart EEE, however, the Performance Specification 4B does not include requirements or acceptance criteria for an interference response test. Veolia will perform

Interference Response Tests at such time as US EPA specifies the test procedures and acceptable criteria for an Interference Response Test.

2.5 Relative Accuracy Test Audit

The Relative Accuracy Test Audit (RATA) is required annually for O_2 and CO CEMS. The Relative Accuracy (RA) test procedures required by Section 7.2 of PS 4B references incorrect sections of PS 3 (for O_2) and PS 4A (for CO). The applicable sections of the performance specifications are:

- RATA procedures: Sections 8.4.3 through 8.4.5 of PS 2.
- O_2 reference methods: Section 8.2 of PS 3
- CO reference methods: Section 8.2 of PS 4A.
- O_2 RA calculations: Section 12.0 of PS 3
- CO RA calculations: Section 12.0 of PS 2
- O_2 RA criterion: Section 13.2 of PS 3
- CO RA criteria: Section 13.2 of PS 4A

A brief summary of the applicable reference methods are provided below:

US EPA Method 3/3A (Stack Gas Composition and Molecular Weight)

The sampling and analytical procedures outlined in this method will be used to determine the O_2 composition of the stack gas during the RATA. Using this method, a gas sample is extracted from the stack at a constant rate for determination of O_2, CO_2 and molecular weight. The integrated gasbag collection option will be employed. The gasbags will be analyzed using an Orsat analyzer. As an alternative, the Method 3A (instrumental analyzer) method may be used for analysis of the sample.

US EPA Method 4 (Stack Gas Moisture Content)

If necessary, the sampling and analytical procedures outlined in this method will be used to determine the moisture content of the stack gas during the RATA. Using this method, a gas sample is extracted from the stack. The gas passes through a series of impingers that contain reagents. The impingers are connected in series and are contained in an ice bath in order to assure condensation of the moisture in the gas stream. Any moisture that is not condensed in the impingers is captured in the silica gel, ensuring that all moisture can be weighed and entered into moisture calculations.

US EPA Method 10 (Carbon Monoxide CEMS)

A continuous emissions monitor will be used to continuously sample exhaust gas for carbon monoxide analysis as described in EPA Method 10. Using this method, a continuous gas sample is extracted from the exhaust gas, and is analyzed for carbon monoxide (CO) using a Luft-type Non-Dispersive Infrared Analyzer (NDIR), or another equivalent analyzer. This sampling and analysis will occur continuously throughout the duration of each run of the RATA.

During a test run of the RATA, US EPA reference methods are utilized to obtain stack gas data. These data are used to calculate the stack gas dry O_2 concentration and the stack gas CO concentration corrected to seven percent oxygen in units of parts per million, dry volume (i.e., in the units of the emission standard, 100 ppmdv CO @ 7% O_2). The average stack gas O_2 (%, dry) and CO (ppmdv, @ 7% O_2) concentrations—as calculated from the installed CEMS over the duration of the run—are compared to the value obtained using the reference methods. The RATA consists of a minimum of 9 test runs. If more test runs are conducted, at least 9 data sets will be used to determine RA, and no more than three sets of data will be rejected. The O_2 and CO RA calculations and acceptance criteria are presented below.

$$RA_{oxygen} = \left|\overline{d}\right| \leq 1.0\%\, O_2, dry$$

$$RA_{CO} = \left\{ \begin{array}{l} \dfrac{\left|\overline{d}\right| + |CC|}{\overline{RM}} \cdot 100\% \leq 10\% \ldots for\ \overline{RM} \geq 50\, ppmdv\ @\ 7\%\ O_2 \\ \left|\overline{d}\right| + |CC| \leq 5\, ppmdv\ @\ 7\%\ O_2 \ldots for\ \overline{RM} < 50\, ppmdv\ @\ 7\%\ O_2 \end{array} \right\}$$

where,

$\overline{d}$ = $\frac{1}{n} \cdot \sum_{1}^{n} \left(RM_i - CEMS_i\right)$

n = number of test runs

RM_i = the concentration determined by the reference method for the i^{th} test run

$CEMS_i$ = the concentration determined by the CEMS for the i^{th} test run

CC = the 2.5 percent error confidence coefficient (see Section 12.4 of PS 2)

If a RATA fails to pass the QC criterion (i.e., the audit indicates excessive inaccuracy), then hazardous waste burning cannot resume until corrective measures have been taken and a RATA demonstrates that the CEMS is operating within the performance specifications. If CO emission levels are significantly low, it may be difficult to produce meaningful results using the RA test procedure. Under these circumstances, Veolia will request approval to utilize the Alternative RA Procedure prescribed by Section 7.3 of PS 4B.

3.0 CEMS MAINTENANCE

Veolia has developed a preventative maintenance program for the CEMS. This program includes frequent inspections of the CEMS in order to identify potential component failures, leaks, and data quality issues. The CEMS preventative maintenance program also includes scheduled replacement of critical components and maintenance of spare parts inventory. All scheduled and unscheduled maintenance of the CEMS will be documented in a CEMS logbook maintained for each incinerator. Section 8.0 of the MC3 CEMS *Operations Guide* provides details for daily, weekly, monthly, quarterly, and annual inspection and maintenance activities. Procedures and recordkeeping for the specific inspection and maintenance activities are described below.

3.1 Daily System Audit

The Daily System Audit includes:

- Review of the daily drift check data
- Inspection of the recording system
- Check for controller alarms and error/warning messages
- Check expected calibration values
- Check of current data status
- Check of calibration gas cylinder pressures
- Check calibration gas pressure regulator settings
- Inspection of the instrument air pressure
- Inspection of the stack gas sampling system

The Daily System Audit Checklist will be used to document the findings from the daily system audit. A CEMS Drift and Calibration Data Sheet will be completed during the daily system audit in order to track and evaluate drift and adjustments made to the CEMS.

3.2 Spare Parts Inventory

CEMS spare parts are maintained in sufficient quantities on-site to perform routine maintenance activities. It is anticipated that these spare parts and typical maintenance supplies will be adequate to service the CEMS. Some services and replacement of components must be performed by an EcoChem Analytics Service Engineer to avoid violation of the system certification.

The following consumable parts have been targeted for periodic inspection and replacement for maintaining the CEMS:

- Air conditioner filters for CEMS shelter
- Instrument air coalescing filters
- Sample pump Teflon diaphragm
- Sample pump Teflon flapper valve
- Sample probe internal filter
- Sample probe gaskets
- Probe-tip filter

The following spare parts are not part of routine maintenance and would be replace by an EcoChem Service Engineer:

- Cell front cover gasket
- Cell inlet filter
- Cell windows with o-ring gaskets
- Cell mirrors

The CEMS Calibration Gas and Spare Parts Log is provided in Appendix A and will be used as needed to keep track of inventory.

3.3 Calibration Gas Supply and Certification

A summary of the calibration gases needed to perform the daily drift checks, calibrations, and ACAs is presented in Table 3-1. The number of gas cylinders maintained on-site depends on the specific mixture of gases in each cylinder and the lead time required for placing orders. An inventory of calibration gases will be conducted in conjunction with the spare parts inventory to ensure that the appropriate gases are available for use. Certification from the supplier of calibration gas quality will be kept with the most recent spare parts inventory documentation.

Each calibration sequence depletes approximately 40 psi, and a cylinder with less than 150 psi should be replaced. The daily system audit includes inspection of the calibration gas cylinder pressures and will be used track usage and to predict when to reorder.

Table 3-1
Summary of Concentration Requirements for Calibration Gases

Constituent	QC Parameter	Concentration Requirement	Accuracy
H_2O	ZD	0%	per gas supplier
O_2	ZD	0%	per gas supplier
	CD	25%	per gas supplier
	ACA	0-2%	EPA Protocol 1/NIST Traceable
	ACA	8-10%	EPA Protocol 1/NIST Traceable
	ACA	14-16%	EPA Protocol 1/NIST Traceable
CO (low range)	ZD	0 ppm	per gas supplier
	CD	200 ppm	per gas supplier
	ACA	0-40 ppm	EPA Protocol 1/NIST Traceable
	ACA	60-80 ppm	EPA Protocol 1/NIST Traceable
	ACA	140-160 ppm	EPA Protocol 1/NIST Traceable
CO (high range)	ZD	0 ppm	per gas supplier
	CD	3000 ppm	per gas supplier
	ACA	0-600 ppm	EPA Protocol 1/NIST Traceable
	ACA	900-1200 ppm	EPA Protocol 1/NIST Traceable
	ACA	2100-2400 ppm	EPA Protocol 1/NIST Traceable
HCl	ZD	0 ppm	per gas supplier
	CD	1000 ppm	per gas supplier
	ACA	0-200 ppm	EPA Protocol 1/NIST Traceable
	ACA	300-400 ppm	EPA Protocol 1/NIST Traceable
	ACA	700-800 ppm	EPA Protocol 1/NIST Traceable

3.4 Corrective Action for Malfunctioning CEMS

It is Veolia's policy to minimize the occurrence of malfunctions by taking a proactive approach to facility maintenance. Proactive measures include the preventive maintenance described in this section, and the calibration and performance testing described in Section 2.0. Frequent inspections and availability of spare parts allow for the timely completion of as needed service to the CEMS prior to a major malfunction.

Operating and maintaining the incinerator during a malfunction will be conformance with the *Startup, Shutdown, and Malfunction Plan* (SSMP). Attachment 4 to the SSMP is the *Program of Corrective Action for Malfunctions.* Section 9.2 of the *Program of Corrective Action for Malfunctions* addresses corrective actions for malfunctioning CEMS. Section 9.0 through 9.2 of the MC3 CEMS *Operations Guide* may be referred to as needed for troubleshooting and corrective maintenance of the CEMS.

4.0. INTEGRATION OF THE CEMS WITH THE AWFCO SYSTEM

The CEMS is integrated with the automatic waste feed cutoff (AWFCO) system to assure on-going compliance with CO emission standards. The AWFCO system is designed to immediately and automatically shut of all waste to the incinerator in the event of an exceedance of an emission or operating limit. The CEMS is integrated with AWFCO system through interlocks. These interlocks are conditions which trigger a relay causing the AWFCO system to activate. This section describes the AWFCO interlocks associated with the CEMS.

4.1 Emission Standards

The CEMS raw data for O_2 (% vol), H_2O (% vol), and CO (ppmv) consists of instantaneous values which have not been smoothed or averaged, evaluated once every 15 seconds. These values are used to calculate CO emissions in the units of emission standards. Calculations equivalent to the following procedures are performed to compare the stack gas emissions to the CO emission standard.

First 15-second data in the units of the emission standards are calculated:

$$CO\,@\,7\%\,O_2, ppmdv = \frac{CO, ppmv}{100\% - (H_2O,\%)} \cdot \left(\frac{14\%}{21\% - \dfrac{O_2,\%}{100\% - (H_2O,\%)}} \right)$$

The calculated 15-second data are then used to calculate one-minute averages (OMAs). The current minute OMA is averaged with the previous 59 OMAs to generate an hourly rolling average (HRA). All rounding is avoided for the numbers used to calculate HRAs. The HRA of CO emissions are rounded to two significant figures.

If the HRA CO emission concentration exceeds the CO emission standard of 100 ppmdv @ 7% O_2, an AWFCO will occur.

4.2 Drift Limits

As described in Section 2.1, waste feeds will be manually shut off in case a drift limit is exceeded. For CO and O_2, drift limits are equal to 2 times the performance specifications. Comparable drift limits have been established for excessive H_2O drift.

5.0. RECORDKEEPING AND QUALITY ASSURANCE REVIEWS

Documentation generated from CEMS QA/QC procedures and monitoring will be kept on-site for a period of five years. The data and documentation that is generated and reviewed is kept in various locations at the Veolia facility. Table 6-1 below lists the storage location and format of this documentation.

Maintenance and Instrument Technicians have the primary responsibility for creating and organizing CEMS data sheets, daily system audit checklists, maintenance logbook, and spare part inventory records. The Environmental Engineer/Specialist or designee will check these records quarterly to verify completion and organization. This review will also consider the following requirements:

1. Whenever excessive audit inaccuracies occur for two consecutive quarters, the current written procedures will be revised or the CEMS modified or replaced to correct the deficiency causing the excessive inaccuracies. Previous versions of written procedures will be kept on record and made available for inspection.

2. If the ZD and/or CD exceed(s) two times the limits in the Performance Specifications, or if the cumulative adjustment to the ZD and/or CD exceed(s) three times the limits in the Performance Specifications, the CEMS is considered "out-of-control" (as defined in 40 CFR 63.8(c)(7)), and the event will be reported in the facility's semi-annual "Excess Emissions and CMS Performance Report". Further detail on this report can be found in the facility CMS Quality Assurance Program.

On an annual basis the Environmental Engineer/Specialist or designee will review all CEMS data generated for the previous 12 months and prepare a brief internal report/memo summarizing findings. Based on this review, the Environmental Engineer/Specialist or designee will solicit recommendations for revisions to the CEMS Quality Assurance Plan. The CEMS Quality Assurance Plan will be revised as needed to maintain QA/QC of the CEMS. All versions of this plan for the last five years remain in the operating record.

Table 5-1 CEMS Records and Reports

Record/Report	Storage Location	Media/Format [1]
CEMS QA Plan – Current Version – Previous Version	Incinerator Manager's Office Operating Records Archives	HD and/or P RD
CEMS Readings and HRA – Previous year through year to date – Remaining archives	Data Historian Operating Records Archives	HD and/or RD RD
Drift and Calibration Data: – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Absolute Calibration Audit – Previous year though year to date – Remaining archives	Operating Record Archives	P and/or RD
Relative Accuracy Test Audit – Previous year through year to date – Remaining archives	Operating Record Archives	P and/or RD
Daily System Audit – Previous year through year to date – Remaining archives	Operating Record Archives	P and/or RD
Preventive Maintenance Logbook – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Spare Parts Inventory – Previous year through year to date – Remaining archives	Operating Records Archives	P and/or RD
Annual Review of CEMS Data	Operating Records Archives	P and/or HD and/or RD

[1] Media Format:

HD - Computer or network hard drive
RD – Removable drive (floppy, CD, backup tape)
P - Paper documentation

6.0 OPERATOR TRAINING AND CERTIFICATION

Training is provided to Veolia employees on the basis of their job title. Individuals specifically involved in the operation of the incinerator and associated CEMS are the Instrument Technicians, Incinerator Operators, and Environmental Engineer/Specialist. The Veolia operator training and certification program meets the requirements outlined in 40 CFR 63.1206(c)(6). Documentation of employee training and certification is kept with the Training Director, and is available for review upon request.

APPENDIX A

CEMS DATA SHEETS AND CHECKLISTS

NOTE: THE FOLLOWING SHEETS ARE FOR EXAMPLE PURPOSES ONLY. VEOLIA MAY UTILIZE EQUIVALENT DOCUMENTATION FOR ANY OF THE SHEETS INCLUDED.

CEMS DRIFT AND CALIBRATION DATA SHEET

Parameter (Span Value)	Date & Time	Concentration		Drift %	Adjustment %	Cumulative Adjustment %
		Reference	Analyzer			
H_2O (60 %)						
Zero						
O_2 (25%)						
Zero						
Calibration						
CO (200 ppm)						
Zero						
Calibration						
CO (3000 ppm)						
Zero						
Calibration						
HCl (1000 ppm)						
Zero						
Calibration						

$$\text{Drift \%} = \frac{\text{Reference - Analyzer}}{\text{Span Value}} \cdot 100\%$$

Adjustment % = Drift % (if zero/span was reset during drift check)

Cumulative Adjustment % = (Previous Cumulative Adjustment %) + (Current Adjustment %)

(Name & Title)

(Signature)

ABSOLUTE CALIBRATION AUDIT (ACA)
DATA SHEET

Parameter	**NIST Traceable Calibration Standards**			
	Gas	**Concentration**		
☐ O_2	Low (Zero)		±	
☐ **CO-low range**	Mid		±	
☐ **CO-high range**	High		±	
☐ **HCl**				

RUN NUMBER	**Concentration**		**Difference**		
	Reference	**Analyzer**	**Low**	**Mid**	**High**
1 – Low				--	--
2 – Mid					--
3 – High			--	--	
4 – Low				--	--
5 – Mid			--		--
6 – High			--	--	
7 – Low				--	--
8 – Mid			--		--
9 – High			--		
		MEAN DIFFERENCE =			
		CALIBRATION ERROR =	%	%	%

$$\text{Calibration Error} = \frac{\text{Mean Difference}}{\text{Span Value}} * 100$$

______________________________ (Name)

______________________________ (Title)

______________________________ (Signature)

______________________________ (Date)

RELATIVE ACCURACY TEST AUDIT RATA
DATA SHEET

Run	Reference Method			CEMS	Difference	Reference Method			CEMS	Difference
	H_2O, % (if applicable)	O_2, % wet (if applicable)	O_2, % dry	O_2, % dry	O_2, % dry	CO ppmv (if applicable)	CO ppmdv	CO ppmdv @ 7% O_2	CO ppmdv @ 7% O_2	CO ppmdv @ 7% O_2
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

O_2 RA	

Mean Difference	
Standard Deviation	
Confidence Coefficient	
CO RA	

(Name)

(Title)

(Signature)

(Date)

CEMS DAILY SYSTEM AUDIT

	Initials
Verify that the most recent drift checks and calibration adjustments are within limits. Complete Drift and Calibration Data Sheet. Corrective Actions:	
Verify proper operation of CEMS data recording and printing Corrective Actions:	
Check for controller alarms and error/warning messages Corrective Actions:	
Check expected calibration values Corrective Actions:	
Check current emissions data status Corrective Actions:	
Verify calibration gas cylinder pressures (>150 psi) Corrective Actions:	
Verify pressure regulator settings (approximately 25-35 psi) Corrective Actions:	
Verify proper instrument air pressure to CEMS umbilical Corrective Actions:	
Perform visual inspection of the stack gas sampling system Corrective Actions:	

(Name) (Title)

(Signature) (Date)

CEMS CALIBRATION GAS AND SPARE PARTS LOG

CALIBRATION GASES:

(Attach all certification forms)

Zero gas: ______________cylinders Composition:________________________

Span gas 1: ______________cylinders Composition:________________________

Span gas 2: ______________cylinders Composition:________________________

Span gas 3: ______________cylinders Composition:________________________

ACA Gases: ____

____

____

PARTS:

Air conditioner filters for CEMS shelter ______________________________

Instrument air coalescing filters ____________________________________

Sample pump Teflon diaphragm_____________________________________

Sample pump Teflon flapper valve___________________________________

Sample probe internal filter _______________________________________

Sample probe gaskets ____

Probe-tip filter____

Cell front cover gasket ____

Cell inlet filter____

Cell windows with o-ring gaskets___________________________________

Cell mirrors ____

Tubing____

Fittings ____

Solenoid Values ____

Thermocouples ____

Electronic parts ____

____

____

Other spare parts ____

____

Inventory taken by: ______________________________ Date: ______________